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BULLETIN
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VOLUME VII.

1875.

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BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., JANUARY, 1875. No. 1.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, JANUARY 4, 1875.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From E. P. Boon, New York, Dec. 15; Melvil Dewey, Amherst, Dec. 21, 26; W. I. Fletcher, Hartford, Conn., Dec. 31; Daniel A. Gleason, Boston, Dec. 21; Frank E. Hotchkiss, New Haven, Dec. 27; Alfred M. Mayer, South Orange, N. J., Dec. 18; Charles Phillips, Germantown, Penn., Dec. 30; Lyon, Société d' Agriculture, Juillet 20.

The LIBRARIAN reported the following additions to the library :—

By Donation.

HOTCHKISS, F. E., of New Haven, Conn. Miscellaneous pamphlets, 8.
MERRITT, L. F. Essex County Mercury for Dec. 2, 9, 16, 23, 1874.
STETSON, CHAS., of New York, N. Y. The Erie Railway Tourist. 1 vol. 4to.
WILLSON, E. B. The Christian Freeman and Record of Unitarian Worthies, Dec., 1874. 8vo pamph.
WORCESTER COUNTY MUSICAL ASSOCIATION. Seventh Annual Festival, Oct. 19, 20, 21, 22, 23, 1874. 8vo pamph.

By Exchange.

ACADÉMIE IMPÉRIALE DES SCIENCES, BELLES-LETTRES ET ARTS, LYON. Mémoires, Classe des Sciences. Tome xx, 1873-74.

- INSTITUT HISTORIQUE, PARIS. L' Investigateur. 40 Année, No. 5, 1874.
 SOCIÉTÉ D' AGRICULTURE, D' HISTOIRE NATURELLE ET DES ARTS UTILES,
 LYON. Annales, 4e Série. Tomes iv, v, 1871-72. 2 pamphlets.
 SOCIÉTÉ LINNEENNE, LYON. Annales. Tome xx. 1873.
 PHYSIKALISCH-MEDICINISCHE GESELLSCHAFT, WÜRZBURG. Verhandlungen,
 Neue Folge, Bd. viii. 1-2 Heft. 1874.
 ZOOLOGISCHE GESELLSCHAFT, FRANKFURT. Zool. Garten xv, Jahrg. Nos.
 1-6, 1874.
 PUBLISHERS. American Naturalist. Forest and Stream. Gloucester Telegraph.
 Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter.
 Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody
 Press. Salem Observer. Salem Post. Sailor's Magazine and Seaman's Friend.

Donations to the cabinets were announced from George L. Peabody, of New York City, a rare and valuable Japanese gold obang; from Louis F. Emilio, gold bearing quartz from the Vulture Mine, Arizona, and from Charles T. Jenkins, gold bearing quartz from Ophir Hill, Grass Valley District, Nevada County, Cal.

Mr. F. W. PUTNAM, of the committee appointed at a previous meeting to prepare a memorial for action of the Institute in relation to a proposed State Topographical, Geological and Biological Survey, reported the same, which was referred to the directors, with authority to act.

ARCHÆOLOGICAL RESEARCHES IN KENTUCKY.

Mr. F. W. PUTNAM gave an account of some of his recent archæological investigations in Kentucky, made with the assistance furnished by the Peabody Museum of Archæology and Ethnology at Cambridge, while he was engaged as Ichthyologist of the Kentucky State Geological Survey, of which Prof. Shaler is chief.

Confining his remarks to researches made in the caves, and in connection with a peculiar form of burial in circular graves, he first exhibited a number of skulls and other bones found under various conditions, and described the peculiarities of each group, comparing them with

those of undoubted Mound Builders, and with those of the New England Indians. While the skulls of the New England Indians are long and narrow, those from the mounds, the circular graves, the stone graves and the caves, were of the short, broad and high type; but in the caves were found two, if not three, classes of burials, and at least two well-marked forms of skulls.

The skulls found in graves which were, as a rule, protected by slabs of stone, were, so far as his researches went, of a form resembling the high, short and broad crania of the typical Mound Builders, while those from caves that contained a large number of skeletons representing bodies that had been thrown into the caves, or perhaps skeletons which had been placed there after the flesh had decayed, were quite characteristic from the very marked depression of the frontal bone and the equally marked concavity on the anterior part of the parietals. The skulls from the "circular grave" were also distinguished from the others by their decided width and shortness, and the more vertical occipital portion.

A series of shin bones was also exhibited, to show the various degrees of flattening which existed, and to prove, as shown by the researches of others, that platycnemism, while most marked in ancient and uncivilized races, could not be taken as a special race character of any great importance.

The examination of a group of mounds near Glasgow was then described, and though no human remains were found in these particular mounds, a most interesting burial place on a hill close by may have had some connection with them. This burial place consisted of a number of circular graves, most of which had been destroyed by the cultivation of the land; but one that had been undisturbed by the plough was carefully opened. This grave

was nearly a circle of about four feet in diameter, and had been dug to the depth of about three feet. Upright slabs of limestone about three feet in height, from one to two feet in width and three or four inches in thickness, had then been placed round the hole. The bottom of the grave had been covered with pieces of shale brought from Peter's Creek, about a quarter of a mile distant. The bodies, at least ten in number, had been placed in the grave, evidently arranged in a sitting posture, in a circle, with their backs against the upright slabs. A few pieces of stone found on the surface of the grave may indicate that stones had been placed over it. If any slight earth-mound had been formed over the grave, it had been washed away, as the edges of the upright stones were projecting a few inches above the present surface of the soil. From the fact that only a fragment of pottery was found among the stones on the surface of the grave, and no implements of any kind in the grave, it may be that articles since scattered were placed over the grave. The number of these circular graves that once existed at this spot on the homestead of Gen. Jos. H. Lewis, who had taken Mr. Putnam to the place, brings up many thoughts as to their connection with the group of mounds in the little valley below them, and speculations regarding their peculiar position lead Mr. Putnam to consider them as probably indicating a peculiar mode of burial which may yet be found to be as characteristic of the singular mound-building race, as the burial under mounds is now supposed to be. The fact that all the bodies must have been placed in the grave at the same time, and, as shown by the teeth, that they were those of persons of various ages, from two children who had still the first set of teeth, to a person so old as to have many of the *alveoli* closed up, while the majority were evidently of middle age; and

also from the peculiar hole in one of the arm bones, perhaps indicating a blow with some pointed instrument, gives opportunity for speculations which cannot be proved or disproved by these silent relics of a once populous race inhabiting the beautiful country where their bones were laid so long ago that tradition of the more recent Indian tribes gives no clew to them; whence they came or whither they went, all is lost in the great mystery of the past, and only their empty heads and wonderful monuments of industry, with their implements of skill, are left to tell us of their former power. We know not if these burials indicate famine, pestilence, war, or the unholy sacrifice. We can only conjecture that they were not the graves of persons who had died a natural death.

The caves of Kentucky were often used as receptacles for the dead, and many of them contain large numbers of human skeletons; but that they were also used as at least temporary places of habitation is shown by the relics found in Salt Cave, situated near the Mammoth Cave, and belonging to the same proprietors. This cave, which is a rival to the Mammoth in the size of some of its avenues, is difficult of access. A small stream of water flows over its mouth, and runs off, through the loose rocks that have fallen from the roof of the cave, to the passage on the left. After entering the cave, the descent of a steep hill of loose rock to the right leads into a large avenue of several miles in length, the floor of which is covered with jagged rocks which have fallen from above. After climbing over this rough road for some distance, small areas are observed where the rock has not fallen from above, and where the original dirt floor or river bed is seen. In these places there are to be found quite level spots where fires have been kindled, and small piles of stone placed by human hands. Here and there, in favor-

able places, other small piles of stones are to be seen erected in such a way as to leave a small hole in their centre, and at the bottom of this hole ashes and the stubs of burnt sticks can be seen; while on some of the rocks about were found small bundles of fagots tied with bark and of a convenient size to be taken in one hand and placed in the holes of the rock piles, evidently indicating that these bundles of sticks were brought into the cave for use as lights and firewood. Farther on, in side passages and chambers, other indications of habitation were noticed, and in one small chamber, in which the foot of a white man had never stepped before, were seen on the cave earth the imprints of feet that had been shod with peculiar braided moccasins or sandals. Here were in reality the "footprints on the sands of time." The naked heel and toes, and the braided covering to the sole of the foot, have left impressions as distinct in the tenacious and heavy soil of the cave as if made but a few days previous. In these side chambers, in only a few of which Mr. Putnam's guides had been before, were found a number of cast-off sandals, very finely made of the twisted leaves of the cat-tail flag (*Typhu*) braided in a careful and artistic way, identical in the manner of braiding with the straw sandals from China, though of a different shape, and having a raised portion from toe to heel, like the sides of a leather slipper, while all the ends of the braids were brought forward and united on the median line over the toes. About twenty-five of these sandal-like moccasins of various sizes and of several slightly varying designs, but all worn through at toe and heel, were found in the interior chambers of the cave. A piece of cloth more than a foot square and finely and regularly woven, probably from the inner bark of some tree, was also found. This cloth was specially inter-

esting, showing as it did that it had been dyed or colored with black stripes, and also in exhibiting at one corner a place where it had been mended by darning. The other articles found in the cave, which were exhibited at the meeting, with those already mentioned, consisted of bunches of the bark such as was used to make the cloth, and of different degrees of fineness; a number of pieces of bark-twine and rope, several showing knots where pieces had been tied together, some made of twisted strands simply, while others were of a five-strand braid, and of a different and more pliable substance than the coarser-twisted kinds; a small piece of quite a delicate fringe or tassel of neatly braided fibres; a number of reed "torches," generally burnt only at one end; a few small fragments of burnt wood, one showing the rough cutting of a flint axe; several fragments of large gourds; two flint arrow points; a few fragments of shells of *Unio*; a few feathers, probably of the wild turkey, and a portion of a wooden platter or dish. No bones of animals indicating the food of these cave people were found, and though the earth in one of the chambers had been disturbed, and looked, in several places, as if burials had been made, no human bones were discovered. Mr. Putnam intended to make further explorations in this cave, but a severe illness, brought on by exposure and fatigue in the caves, prevented him at that time from carrying out his plan. Enough was discovered, however, to show the importance of a thorough exploration of the caves in this country, both to ascertain the facts relating to their having been used as habitations and as sepulchres, and Mr. Putnam stated that it was encouraging to science to feel that the work begun by the Kentucky Survey, with the assistance given by the Peabody Museum of Archæology at Cambridge, will be continued until more is known relat-

ing to the archæology of this large and most important group of American caves.

The discovery, by the saltpetre miners of 1812-15, of bodies buried with care in some of the caves of Kentucky and Tennessee, and the numerous articles which had been found with them, was alluded to by Mr. Putnam, who stated that since his return from Kentucky he had examined the body, and what remained of the very large number of articles found with it, that was so widely known as the "Mammoth Cave Mummy" sixty years ago. This body was, in reality, found in Short Cave, situated about eight miles from the Mammoth Cave, and had been taken to the latter place for the purpose of exhibition. Mr. Putnam had visited the spot from which the body had been taken, and from the location of the grave thought that there was some evidence of the burial having been prior to the fall of the roof rock, which seems to have taken place in many of the caves in this region at a remote time. In some of the caves large stalagmites have formed over these fallen rocks, though in most of the caves where this falling has occurred the passages were dry at the time, and have so continued. He was glad to state that though these priceless relics of a former race had been sadly neglected, and many of the articles found in the grave had been lost and others had gone to decay, still enough remained at the rooms of the American Antiquarian Society at Worcester, to identify the articles found by him in Salt Cave as the same in material, design and structure as those found with the body in Short Cave, so that he had thus secured undoubted osteological characters of the race to go with the articles of clothing, etc., of the people who had made use of Salt Cave as a habitation, and he thought, from all that had been found, we could, with little doubt, class this people

among the more highly civilized and agricultural of the prehistoric races of America, and it was also very probable that Salt Cave had only been used as a temporary retreat. A number of fragments of the twine, cloth, etc., found with the body now in the collection of the Antiquarian Society, were exhibited side by side with similar ones from Salt Cave, and were seen to be of the same character. All the specimens of cloth, etc., from Salt Cave were extremely brittle, and had only been preserved by saturating in gelatine and afterwards mounting between glass, while those from the grave in Short Cave were, from some cause, still in their natural pliable condition. In this connection it is also interesting to record the fact that the wooden bowl from the Mammoth Cave, in the collection of the American Antiquarian Society at Worcester, is the one which tradition gives as having been found in the passage of the Mammoth Cave, still known, from this circumstance, as the wooden-bowl chamber, and it is probable that the fragment of the wooden vessel found in Salt Cave was part of a similar article.

Capt. WM. H. DALL, of the United States Coast Survey, alluded to the mode of burial of the Aleutian Islanders, and of the preparation of the bodies after death, by which they were partially mummified. He also spoke of the beautiful braided grass-work of the Aleuts, and stated that the Eskimos made a kind of a stocking of braided grass, which they wore inside of their boots as an extra protection to the feet.

LISTS OF BIRDS OBSERVED AT VARIOUS LOCALITIES CONTIGUOUS
TO THE CENTRAL PACIFIC RAILROAD, FROM SACRAMENTO
CITY, CALIFORNIA, TO SALT LAKE CITY, UTAH.

BY ROBERT RIDGWAY.

Continued from page 174, Vol. vi.

The following species were found breeding on the adjacent mountains eastward of the Sierra Nevada, in July and August, 1867, and April and May, 1868 :—

1. *Sialia arctica*. Abundant.
2. *Lophophanes inornatus*. Common (locally).
3. *Psaltiriparus minimus plumbeus*. Abundant (locally).
4. *Salpinctes obsoletus*. Very abundant.
5. *Catherpes Mexicanus conspersus*. Rare.
6. *Myiadestes Townsendi*. Common?
7. *Pipilo erythrophthalmus Oregonus*. Abundant.
8. *P. chlorurus*. Common.
9. *Scolecophagus cyanocephalus*. Very abundant.
10. *Corvus corax carnivorus*. Abundant.
11. *Gymnokitta cyanocephala*. Abundant.
12. *Empidonax obscurus*. Common.
13. *Selasphorus rufus*. Abundant.
14. *Trochilus Alexandri*. Abundant.
15. *Archibuteo lagopus Sanctijohannis*. Common.
16. *Aquila chrysaëtus Canadensis*. Common.
17. *Falco saker polyagrus*. Common.
18. *F. columbarius*. Rare?
19. *Nisus Cooperi*. Rare.
20. *Oreortyx pictus plumifera*. Rare.

III. WESTERN NEVADA, ETC.

a. Eagle Valley (November 29, 1867).

In Eagle Valley but one locality was visited, viz., the town of Genoa and vicinity, including marshes in the valley and pine forests on the Sierra Nevada. In the former the usual species of water fowl were found, and also *Circus hudsonius* and *Falco polyagrus*. In the pines the species were the same as those near Carson City, but the mountain quail (*Oreortyx pictus plumifera*) was more common.

b. Carson Valley (Nov. 27-29, 1867; Jan 13-April 29, 1868).

The species breeding in the vicinity of Carson City were divided into three groups—one inhabiting the pine woods of the Sierra Nevada (Washoe Spur), one the cedar and piñon groves of the ranges

to the eastward, and the other the sage brush wastes and other localities in the valleys. The first two sets are included in lists under the head of II, d; the other was composed of the following species, inhabiting chiefly the sage brush and meadows:—

(*Sage-brush plains.*)

1. *Oreoscoptes montanus*. Very abundant.
2. *Eremophila alpestris chrysolæma*. Common.
3. *Collurio Ludovicianus excubitoroides*. Common.
4. *Poospiza Belli Nevadensis*. Very abundant.
5. *P. bilineata*. Rare.
6. *Spizella Breweri*. Abundant.
7. *Chondestes grammaca*. Common.
8. *Antrostomus Nuttalli*. Common.
9. *Chordeiles popetue Henryi*. Common.
10. *Speotyto cunicularia hypogæa*. Rare.
11. *Zenaidura Carolinensis*. Very abundant.
12. *Centrocercus urophasianus*. Rare.

(*River valley.*)

1. *Geothlypis trichas*. Common.
2. *Icteria virens longicauda*. Common.
3. *Pyranga Ludoviciana*. Common.
4. *Vireo gilvus Swainsoni*. Abundant.
5. *Pooecetes gramineus confinis*. Rare.
6. *Passerculus savanna alaudinus*. Common.
7. *Coturniculus passerinus perpallidus*. Common.
8. *Hedymeles melanocephalus*. Common.
9. *Cyanospiza amœna*. Common.
10. *Carpodacus frontalis*. Common.
11. *Melospiza melodia Heermanni*. Common.
12. *Pipilo erythrophthalmus Oregonus*. Common.
13. *Agelaius phoeniceus*. Abundant.
14. *Xanthocephalus icterocephalus*. Abundant.
15. *Sturnella neglecta*. Abundant.
16. *Icterus Bullocki*. Abundant.
17. *Pica melanoleuca Hudsonica*. Very abundant.
18. *Tyrannus verticalis*. Very abundant.
19. *Contopus Richardsoni*. Abundant.
20. *Empidonax pusillus*. Abundant.
21. *Otus vulgaris Wilsonianus*. Common.
22. *Bubo Virginianus arcticus*. Rare.
23. *Falco sparverius*. Very abundant.
24. *Ægialitis vociferus*. Abundant.

25. *Tringoides macularius*. Abundant.
26. *Herodias alba egretta*. Rare.
27. *Nyctiardea grisea naevia*. Rare.
28. *Botaurus minor*. Common.
29. *Grus Canadensis*. Common.
30. *Porzana Carolina*. Common.
31. *Fulica Americana*. Common.
32. *Anas boschas*. Common.
33. *Querquedula cyanoptera*. Common.

(In suitable localities.)

1. *Progne subis*. Common.
2. *Tachycineta bicolor*. Abundant.
3. *Cotyle riparia*. Common.
4. *Stelgidopteryx serripennis*. Abundant.
5. *Hirundo horreorum*. Common.
6. *Petrochelidon lunifrons*. Very abundant.
7. *Sayornis Sayus*. Common.
8. *Ceryle alcyon*. Common.

Farther down the river, where the cottonwood trees increase in number, the fauna was augmented by *Nephæcetes niger* (extremely abundant), *Buteo Swainsoni* and *B. borealis calurus*, thus becoming essentially like that of the lower Truckee Valley (see table f.).

CATALOGUE OF WINTER RESIDENTS IN THE VICINITY OF CARSON CITY.

No.	Species.	Numbers.	Localities frequented.
1	<i>Turdus migratorius</i> . .	Common	Willows.
2	<i>Cinclus Mexicanus</i> . .	Rare	Streams.
3	<i>Sialia Mexicana</i> . . .	Abundant	Fields and pines.
4	<i>S. arctica</i>	Abundant	Cedars and open fields.
5	<i>Regulus calendula</i> . .	Abundant	Willows.
6	<i>Lophophanes inornatus</i>	Abundant	Pines and cedars.
7	<i>Parus montanus</i> . . .	Abundant	Pines only.
8	<i>Psaltriparus minimus</i> <i>plumbens</i>	Sometimes met with	Brushy ravines.
9	<i>Sitta Carolinensis aculeata</i>	Abundant	Pines only.
10	<i>S. pygmaea</i>	Abundant	Pines only.
11	<i>Certhia Americana</i> . .	Not common . . .	All wooded places.
12	<i>Catherpes Mexicana</i> <i>conspersus</i>	Common	Secluded rocky places.
13	<i>Telmatodytes palustris</i> <i>paludicola</i>	Common	Tules and rushes.
14	<i>Troglodytes aëdon</i> <i>Parkmanni</i>	Not common . . .	Brushwood and willows.
15	<i>T. hyemalis Pacificus</i> .	Rare	River bottoms.
16	<i>Anthus Ludovicianus</i> .	Extremely abundant.	All wet open portions.
17 ₂	<i>Dendroica Auduboni</i> .	Common	Willows and cotton woods.
18	<i>Collurio borealis</i> . . .	Not common . . .	Open situations.

No.	Species.	Numbers.	Localities frequented.
19	<i>C. Ludovicianus</i>	Abundant	Open situations.
20	<i>excubitoroides</i>	Rare	Mixed with flocks of <i>Eremophila</i> .
21	<i>Plectrophanes Lapponicus</i>	Abundant	Willows and brushwood.
22	<i>Zonotrichia leucophrys</i>	Abundant	All wooded places.
23	<i>intermedia</i>	Abundant	Sage-brush only.
24	<i>Junco hyemalis Oregonus</i>	Common	Sage-brush and brushwood.
25	<i>Poospiza Belli Nevadensis</i>	Abundant	Willows and tules.
26	<i>Spizella monticola</i>	Rare	Willows along streams.
27	<i>Melospiza melodia</i>	Abundant	All bushy places.
28	<i>Heermanni</i>	Exceedingly abund't.	All open portions.
29	<i>Passerella schistacea</i>	Abundant	Vicinity of corrals.
30	<i>Pipilo erythrophthalmus</i>	Abundant	Vicinity of corrals.
31	<i>Oregonus</i>	Not common . . .	Sage-brush and fields.
32	<i>Eremophila alpestris</i>	Abundant	Vicinity of corrals.
33	<i>chrysolæma</i>	Extremely abundant	
34	<i>Agelaius phœniceus</i>	Abundant	
35	<i>Xanthocephalus</i>	Not common . . .	
36	<i>icterocephalus</i>	Abundant	
37	<i>Sturnella neglecta</i>	Abundant	
38	<i>Scolecophagus</i>	Extremely abundant	
39	<i>cianocephalus</i>	Abundant	
40	<i>Pica melanoleuca</i>	Abundant	
41	<i>Hudsonica</i>	Abundant	
42	<i>Cyanura Stelleri frontalis</i>	Abundant	
43	<i>Gymnokitta cyanocephala</i>	Abundant	
44	<i>Picicorvus Columbianus</i>	Abundant	
45	<i>Corvus corax carnivorus</i>	Abundant	
46	<i>Picus villosus Harrisii</i>	Common	
47	<i>P. albolarvatus</i>	Rather common . .	
48	<i>P. albolarvatus</i>	Rare	
49	<i>Picoides arcticus</i>	Common	
50	<i>Sphyrapicus thyroideus</i>	Common	
51	<i>Colaptes auratus</i>	Abundant	
52	<i>Mexicanus</i>	Abundant	
53	<i>Speotyto cunicularia</i>	Rare	
54	<i>hypogæa</i>	Rare	
55	<i>Bubo Virginianus arcticus</i>	Common	
56	<i>Otus vulgaris Wilsonianus</i>	Common	
57	<i>Falco saker polyagrus</i>	Common	
58	<i>F. columbarius</i>	Rare	
59	<i>F. sparverius</i>	Very abundant . .	
60	<i>Circus cyaneus Hudsonius</i>	Common	
61	<i>Nisus Cooperi</i>	Rare	
62	<i>Aquila chrysaëtos</i>	Common	
63	<i>Canadensis</i>	Common	
64	<i>Archibuteo lagopus</i>	Common	
65	<i>Sanctijohannis</i>	Common	
66	<i>Buteo borealis calurus</i>	Common	
67	<i>B. Swainsoni</i>	Common	
68	<i>Oreortyx pictus plumifera</i>	Rare	
69	<i>Ægialitis vociferus</i>	Rare	
70	<i>Botaurus minor</i>	Rare	
71	<i>Branta Canadensis</i>	Abundant	
72	<i>B. Hutchinsi</i>	Abundant	
73	<i>Anas boschas</i>	Abundant	
74	<i>Aythya Americana</i>	Abundant	
75	<i>A. vallisneria</i>	Abundant	
76	<i>Bucephala Americana</i>	Abundant	
77	<i>B. albeola</i>	Abundant	
78	<i>Fulix marila</i>	Abundant	
79	<i>F. collaris</i>	Abundant	
80	<i>Erismatura rubida</i>	Abundant	
81	<i>Podiceps occidentalis</i>	Common	
82	<i>P. anritus Californicus</i>	Common	
83	<i>Podilymbus podiceps</i>	Common	

d. Washoe Valley (May 9, 1868).

In passing by the shore of Washoe Lake, large numbers of the following species were seen:—*Fulica Americana*, *Sterna regia*, *S. Forsteri* and *Hydrochelidon fissipes*. Among the open pine groves and scattered pine trees which reached from the slope of the lofty and heavily timbered Washoe Mountains out some distance upon the valley, the characteristic birds were *Cyanura Stelleri frontalis*, *Melanerpes torquatus*, *Sialia Mexicana* and *Turdus migratorius*; penetrating a short distance into the forest, *Picus albolarvatus* and *Passerella iliaca megarhynchus* were found to be common.

e. Truckee Meadows (July 16-20; November 5-7 and 11-20, 1867).

The characteristic birds of the summer fauna were chiefly numerous water-fowl, especially *Querquedula cyanoptera*, *Chaulelasmus streperus*, *Anas boschas*, *Fulica Americana*, *Recurvirostra Americana*, and *Himantopus nigricollis*, all found in the greatest abundance. In the fall the following species not met with in the summer, were observed:—*Anthus Ludovicianus* (excessively abundant), *Corvus Americanus* (common), *Archibuteo lagopus Sanctijohannis* (abundant). A yellow-winged *Colaptes*, probably *C. chrysoides*, was seen.

f. Catalogue of the Birds breeding in the Truckee Valley (May and June, 1868 and July and August, 1867.)

1. *Oreoscoptes montanus*. Common.
2. *Troglodytes ædon Parkmanni*. Abundant.
3. *Telmatodytes palustris paludicola*. Abundant.
4. *Dendroica æstiva*. Abundant.
5. *Geothlypis trichas*. Common.
6. *Icteria virens longicauda*. Common.
7. *Pyrranga Ludoviciana*. Common.
8. *Hirundo horreorum*. Common.
9. *Tachycineta bicolor*. Very abundant.
10. *Progne subis*. Rare.
11. *Stelgidopteryx serripennis*. Abundant.
12. *Cotyle riparia*. Abundant.
13. *Petrochelidon lunifrons*. Abundant.
14. *Vireo gilvus Swainsoni*. Abundant.
15. *Collurio Ludovicianus excubitoroides*. Common.
16. *Carpodacus frontalis*. Common.
17. *Chrysomitris tristis*. Rare.
18. *Passerculus savanna alaudinus*. Common.
19. *Poocetes gramineus confinis*. Rare.

20. *Melospiza melodia* Heermanni. Abundant.
21. *Poospiza bilineata*. Common.
22. *P. Belli* Nevadensis. Abundant.
23. *Spizella socialis* Arizonae. Abundant.
24. *S. Breweri*. Abundant.
25. *Chondestes grammaca*. Abundant.
26. *Hedymeles melanocephalus*. Common.
27. *Cyanospiza amœna*. Rare.
28. *Pipilo erythrophthalmus* Oregonus. Common.
29. *P. chlorura*. Rare.
30. *Molothrus pecoris*. Rare.
31. *Agelaius phœniceus*. Abundant.
32. *Xanthocephalus icterocephalus*. Abundant.
33. *Sturnella neglecta*. Abundant.
34. *Icterus Bullocki*. Abundant.
35. *Pica melanoleuca* Hudsonica. Abundant.
36. *Tyrannus Carolinensis*. Common.
37. *T. verticalis*. Abundant.
38. *Myiarchus crinitus cinerascens*. Rare.
39. *Sayornis Sayus*. Rare.
40. *Contopus Richardsoni*. Abundant.
41. *Empidonax pusillus*. Abundant.
42. *Chordeiles popetue* Henryi. Common.
43. *Nephœcetes niger borealis*. Rare.
44. *Chætura Vauxi*. Common.
45. *Trochilus Alexandri*. Abundant.
46. *Ceryle alcyon*. Common.
47. *Coccyzus Americanus*. Rare.
48. *Picus villosus* Harrisi. Common.
49. *Colaptes auratus* Mexicanus. Abundant.
50. *Bubo Virginianus arcticus*. Common.
51. *Otus vulgaris* Wilsonianus. Common.
52. *Circus cyaneus* Hudsonius. Abundant.
53. *Falco sparverius*. Very abundant.
54. *Buteo borealis calurus*. Common.
55. *B. Swainsoni*. Common.
56. *Pandion haliaëtus* Carolinensis. Rare.
57. *Rhinogryphus aura*. Abundant.
58. *Zenaidura Carolinensis*. Very abundant.
59. *Ægialitis vociferus*. Common.
60. *Recurvirostra Americana*. Common.
61. *Himantopus nigricollis*. Common.
62. *Rhyacophilus glareola solitarius*. Rare.
63. *Tringoides macularius*. Common.

64. *Numenius longirostris*. Rare.
65. *Herodias alba egretta*. Rare.
66. *Nyctiardea grisea nævia*. Rare.
67. *Botaurus minor*. Common.
68. *Ardetta exilis*. Rare.
69. *Grus Canadensis*. Common.
70. *Rallus Virginianus*. Common.
71. *Porzana Carolina*. Common.
72. *Fulica Americana*. Abundant.
73. *Branta Canadensis*. Common.
74. *Anas boschas*. Very abundant.
75. *Dafila acuta*. Common?
76. *Chaulelasmus streperus*. Very abundant.
77. *Mareca Americana*. Common.
78. *Querquedula cyanoptera*. Abundant.
79. *Q. discors*. Rare?
80. *Spatula clypeata*. Common?
81. *Aix sponsa*. Rare?
82. *Erismatura rubida*.
83. *Graculus dilophus*.
84. *Sterna regia*.
85. *S. Forsteri*.
86. *Podiceps occidentalis*.
87. *P. auritus Californicus*.
88. *Podilymbus podiceps*.

g. Species breeding on adjacent plateaux.

1. *Eremophila alpestris chrysolæma*. Common.
2. *Antrostomus Nuttalli*. Common.
3. *Speotyto cunicularia hypogæa*. Rare.
4. *Centrocerus urophasianus*. Common.

h. Species breeding on the rocky islands in Pyramid Lake.

1. *Tachycineta thalassina*. Abundant.
2. *Falco communis anatum*. One pair.
3. *Haliaëtus leucocephalus*. One pair.
4. *Ardea herodias*. Abundant.
5. *Pelecanus erythrorhynchus*. Excessively abundant.
6. *Larus Californicus*. Excessively abundant.

The following notes relate further to the bird-fauna of Western Nevada:

List of species observed in the Lower Truckee Valley in
May and not at other times.

1. *Nephœcetes niger borealis*. Rare.
2. *Chætura Vauxi*. Common.
3. *Trochilus Alexandri*. Common.
4. *Turdus Swainsoni ustulatus*. Rare.
5. *Carpodacus frontalis*. Abundant.
6. *Molothrus pecoris*. Rare.

Species seen only in July and August.

1. *Selasphorus rufus*. Very abundant.
2. *Tyrannus Carolinensis*. Several pairs.
3. *Myiodiocytes pusillus*. Rare.

Species seen only in December.

1. *Regulus calendula*. Very abundant.
2. *Anthus Ludovicianus*. Very abundant.
3. *Dendroica Auduboni*. Very abundant.
4. *Sialia arctica*. Rare.
5. *Troglodytes parvulus hyemalis*. Rare.
6. *Certhia familiaris fusca*. Rare.
7. *Zonotrichia leucophrys intermedia*. Very abundant.
8. *Junco hyemalis Oregonus*. Very abundant.
9. *Spizella monticola*. Common.

SPRING ARRIVAL OF BIRDS IN WESTERN NEVADA IN 1868.

a. Carson City.

1. <i>Sayornis Sayus</i>	March 12.
2. <i>Salpinctes obsoletus</i>	" 20.
3. <i>Oreoscoptes montanus</i>	" 24.
4. <i>Tachycineta bicolor</i>	" 25.
5. <i>Poocætes gramineus confinis</i> . . .	April 1.
6. <i>Rhinogryphus aura</i>	" 2.
7. <i>Hirundo horreorum</i>	" 8.
8. <i>Spizella Breweri</i>	" 9.
9. <i>Stelgidopteryx serripennis</i>	" 15.
10. <i>Empidonax obscurus</i>	" 21.
11. <i>Tyrannus verticalis</i>	" 22.
12. <i>Progne subis</i>	" 23.
13. <i>Zenaidura Carolinensis</i>	" 23.
14. <i>Pipilo chlorurus</i>	" 25.

15. <i>Melanerpes torquatus</i>	April	25.
16. <i>Spizella socialis</i> <i>Arizonæ</i>	"	29.
17. <i>Cyanocitta</i> <i>Floridana</i> <i>Californica</i>	"	29.
18. <i>Melospiza</i> <i>Lincolni</i>	"	29.
19. <i>Tringoides macularius</i>	"	29.
20. <i>Vireosylvia gilva</i> <i>Swainsoni</i>	"	29.
21. <i>Chondestes grammaca</i>	May	3.
22. <i>Myiadestes Townsendii</i>	"	4.
23. <i>Petrochelidon lunifrons</i>	"	4.

b. Washoe Valley.

24. <i>Fulica Americana</i>	May	9.
25. <i>Sterna regia</i>	"	9.
26. <i>Hydrochelidon fissipes</i>	"	9.

(These were all abundant at this date.)

c. Steamboat Valley.

27. <i>Dendroica æstiva</i>	May	9.
28. <i>Cyanospiza amœna</i>	"	9.
29. <i>Icterus Bullocki</i>	"	9.

d. Truckee Meadows.

30. <i>Geothlypis trichas</i>	May	10.
31. <i>Icteria virens longicauda</i>	"	10.
32. <i>Pyranga Ludoviciana</i>	"	10.

e. Truckee Reservation, near Pyramid Lake.

33. <i>Carpodacus frontalis</i>	May	13.
34. <i>Poospiza bilineata</i>	"	13.
35. <i>Rhyacophilus glareola solitarius</i>	"	13.
36. <i>Hedymeles melanocephalus</i>	"	14.

IV. EASTERN NEVADA, ETC.

a. Birds found in the West Humboldt Mountains,

Sept. 3-Oct. 23, 1867.

1. *Turdus migratorius*. Common.
2. *Sialia arctica*. Common.
3. *Cinclus Mexicanus*. Common.

4. *Psaltiriparus minimus plumbeus*. Abundant.
5. *Salpinctes obsoletus*. Common.
6. *Troglodytes ædon Parkmanni*. Common.
7. *Anthus Ludovicianus*. Common.
8. *Eremophila alpestris chrysolæma*. Common.
9. *Helminthophaga celata*. Common.
10. *H. celata lutescens*. Rare.
11. *Dendroica æstiva*. Common.
12. *D. Auduboni*. Common.
13. *Geothlypis Macgillivrayi*. Common.
14. *Icteria virens longicauda*. Common.
15. *Myiodioides pusillus*. Abundant.
16. *Vireosylvia gilva Swainsoni*. Abundant.
17. *Lanivireo solitaria Cassini*. Rare.
18. *L. solitarius*. Very rare.
19. *Collurio Ludovicianus excubitoroides*. Rather common.
20. *Carpodacus frontalis*. Rare.
21. *Passerculus savanna alaudinus*. Common.
22. *Melospiza melodia fallax*. Common.
23. *M. melodia guttata*. One specimen.
24. *Zonotrichia leucophrys intermedia*. Abundant.
25. *Z. coronata*. One specimen.
26. *Poospiza Belli Nevadensis*. Rare.
27. *P. bilineata*. Rare.
28. *Junco hyemalis Oregonus*. Common.
29. *Hedymeles melanocephalus*. Common.
30. *Pipilo erythrophthalmus Oregonus*. Common.
31. *P. chlorura*. Common.
32. *Agelaius phœniceus*. Common.
33. *Sturnella neglecta*. Common.
34. *Icterus Bullocki*. Rare.
35. *Scolecophagus cyanocephalus*. Very abundant.
36. *Corvus corax carnivorus*. Common.
37. *Pica melanoleuca Hudsonica*. Abundant.
38. *Cyanocitta Floridana Woodhousii*. Common.
39. *Sayornis Sayus*. Common.
40. *Empidonax obscurus*. Rare.
41. *Colaptes auratus Mexicanus*. Common.
42. *C. chrysoides?* One specimen.
43. *Nisus Cooperi*. Rare.
44. *Ectopistes migratoria*. One specimen.
45. *Zenaidura Carolinensis*. Abundant.
46. *Centrocercus urophasianus*. Common.
47. *Regulus calendula*. Common.

b. Species breeding on Toyabe Mountains, at an altitude of about 6,500-7,000 feet (Austin, July 2-4, 1868).

1. *Oreoscoptes montanus*. Rare.
2. *Turdus migratorius*. Common.
3. *Pipilo chlorurus*. Very abundant.
4. *Empidonax obscurus*. Abundant.
5. *Eremophila alpestris* (*leucolæma*?) Common.
6. *Spizella Breweri*. Abundant.
7. *Cyanospiza amœna*. Common.
8. *Poocætes gramineus confinis*. Common.
9. *Panyptila saxatilis*. Rare.

c. Eastern slope of Ruby Mountains (July 13-Sept. 1).

1. *Turdus migratorius*. Common.
2. *Oreoscoptes montanus*. Rare.
3. *Sialia arctica*. Abundant.
4. *Parus montanus*. Rare.
5. *Psaltiriparus minimus plumbeus*. Rare.
6. *Salpinctes obsoletus*. Common.
7. *Catherpes Mexicanus conspersus*. Rare.
8. *Troglodytes ædon Parkmanni*. Common.
9. *Eremophila alpestris* (*chrysolæma*?) Common.
10. *Helminthophaga Virginiae*. Common.
11. *Dendroica æstiva*. Abundant.
12. *D. nigrescens*. Common.
13. *Geothlypis Macgillivrayi*. Common.
14. *Icteria virens longicauda*. Rare.
15. *Myiodioctes pusillus*. Rare.
16. *Pyrauga Ludoviciana*. Common.
17. *Tachycineta thalassina*. Abundant.
18. *Hirundo horreorum*. Common.
19. *Petrochelidon lunifrons*. Very abundant.
20. *Vireo solitarius plumbeus*. Common.
21. *Vireosylvia gilva Swainsoni*. Abundant.
22. *Collurio Ludovicianus excubitoroides*. Common.
23. *Carpodacus Cassini*. Very abundant.
24. *Loxia leucoptera*. One specimen.
25. *Chrysomitris pinus*. Very abundant.
26. *C. tristis*. Rare.
27. *Poocætes gramineus confinis*. Common.
28. *Melospiza melodia fallax*. Common.

¹ What was taken to be *P. melanotis*, a North Mexican species, was seen here.

29. *Poospiza Belli Nevadensis*. Common.
30. *Spizella Breweri*. Common.
31. *S. socialis Arizonae*. Very abundant.
32. *Chondestes grammacus*. Common.
33. *Hedymeles melanocephalus*. Common.
34. *Cyanospiza amœna*. Common.
35. *Pipilo erythrophthalmus megalonyx*. Rare.
36. *P. chlorura*. Rare.
37. *Icterus Bullocki*. Common.
38. *Scolecophagus cyanocephalus*. Rare.
39. *Corvus corax carolinensis*. Common.
40. *Picicorvus Columbianus*. Common.
41. *Gymnokitta cyanocephala*. Common.
42. *Cyanocitta Floridana Woodhousii*. Common.
43. *Tyrannus verticalis*. Abundant.
44. *Myiarchus crinitus cinerascens*. Common.
45. *Sayornis Sayus*. Common.
46. *Contopus borealis*. Rare.
47. *C. Richardsoni*. Abundant.
48. *Empidonax obscurus*. Abundant.
49. *E. pusillus*. Abundant.
50. *Antrostomus Nuttalli*. Common.
51. *Chordeiles popetue Henryi*. Abundant.
52. *Panyptila saxatilis*. Excessively abundant.
53. *Stellula calliope*. Common.
54. *Selasphorus platycercus*. Excessively abundant.
55. *Trochilus Alexandri*. Common.
56. *Picus villosus Harrisii*. Rare.
57. *Colaptes auratus Mexicanus*. Common.
58. *Falco saker polyagrus*. Common.
59. *F. sparverius*. Abundant.
60. *Aquila chrysaëtus Canadensis*. Common.
61. *Buteo borealis calurus*. Common.
62. *B. Swainsoni*. Common.
63. *Nisus Cooperi*. Rare.
64. *Zenaidura Carolinensis*. Abundant.
65. *Centrocercus urophasianus*. Common.

d. Species found on the eastern slope of the East Humboldt
Mountains (September 4-10, 1868.)

1. *Troglodytes aëdon Parkmanni*. Common.
2. *Helminthophaga ruficapilla*.² One specimen.

² The species in italic were met with no farther west than this locality.

3. *H. celata*. Very abundant.
4. *H. celata lutescens*.³ Very rare.
5. *Dendroica Townsendi*. Rare.
6. *D. occidentalis*. Rare.
7. *Geothlypis trichas*. Common.
8. *G. Macgillivrayi*. Common.
9. *Turdus Swainsoni*. Common.
10. *Chrysomitris pinus*. Abundant.
11. *Pooecætes gramineus confinis*. Abundant.
12. *Contopus Richardsoni*. Common.
13. *Empidonax obscurus*. Abundant.
14. *E. Hammondi*. Common.
15. *Selasphorus rufus*.³ One pair.
16. *S. platycercus*. Abundant.
17. *Melanerpes torquatus*. Common.
18. *Canace obscura*. Common.

e. Species observed in the Upper Humboldt Valley
(September 10-19).

1. *Turdus Pallasi nanus*. One specimen.
2. *T. Swainsoni*. Common.
3. *Helminthophaga celata*. Common.
4. *Sitta Canadensis*. Rare.
5. *Ampelis cedrorum*. Rare.
6. *Vireo solitarius*. Rare.
7. *Passerculus savanna alaudinus*. Common.
8. *Zonotrichia leucophrys intermedia*. Abundant.
9. *Melospiza melodia fallax*. Abundant.
10. *M. Lincolni*. Common.
11. *Passerella iliaca schistacea*. Common.
12. *Junco hyemalis Oregonus*. Abundant.
13. *Pipilo chlorura*. Common.
14. *Empidonax obscurus*. Common.
15. *Antrostomus Nuttalli*. Common.
16. *Picus villosus Harrisii*. Common.
17. *P. pubescens Gairdneri*. Rare.
18. *Sphyrapicus varius nuchalis*. Rare.
19. *Melanerpes torquatus*. Rare.
20. *Nisus fuscus*. Common.
21. *Pediocates phasianellus Columbianus*. Abundant.

³ These species were seen no farther east than this locality.

f. Species found in the Lower Humboldt Valley (at the "Sink,"
August 20-27, 1867).

1. *Passerculus savanna alaudinus*. Abundant.
2. *Eremophila alpestris chrysolæma*. Abundant.
3. *Corvus corax carinivorus*. Abundant.
4. *Recurvirostra Americana*. Abundant.
5. *Himantopus nigricollis*. Abundant.
6. *Actodromus minutilla*. Abundant.
7. *A. Bairdi*. Abundant.
8. *Ereunetes pusillus*. Abundant.
9. *Ibis thalassinus*. Abundant.
10. *Sterna regia*. Abundant.
11. *S. Forsteri*. Abundant.

At the town of Oreana, about a day's journey above, *Ibis thalassinus* was found, and also several species of land birds, in addition to the above, as *Oreoscoptes montanus*, *Poospiza Belli Nevadensis*, *Melospiza melodia fallax*, *Xanthocephalus icterocephalus*, *Agelaius phœniceus*, *Sturnella neglecta*, etc.

g. List of species found at Soda Lake, Carson Desert
(June 28, 1868).

1. *Phænopepla nitens*? One specimen.
2. *Himantopus nigricollis*. Abundant.
3. *Recurvirostra Americana*. Abundant.

h. Species found at Ruby and Franklin Lakes, Ruby Valley
(July 13-September 4, 1868.)

1. *Geothlypis trichas*. Common.
2. *Telmatodytes palustris paludicola*. Common.
3. *Coturniculus passerinus perpallidus*. Common.
4. *Passerculus savanna alaudinus*. Abundant.
5. *Agelaius phœniceus*. Abundant.
6. *Xanthocephalus icterocephalus*. Abundant.
7. *Dolichonyx oryzivorus*. Abundant.
8. *Ibis guarauna*? Abundant.
9. *Ardea herodias*. Abundant.
10. *Fulica Americana*. Abundant.
11. *Branta Canadensis*. Abundant.
12. *Anas boschas*. Abundant.
13. *Sterna Forsteri*. Abundant.
14. *Hydrochelidon fissipes*. Abundant.

i. Species seen in Thousand Spring Valley (Sept. 20-25).

1. *Dendroica Townsendi*.
2. *Zonotrichia leucophrys intermedia*.
3. *Empidonax obscurus*.
4. *Picus villosus Harrisii*.
5. *Sphyrapicus varius nuchalis*.
6. *Nyctale acadica*.

j. Species observed at "City of Rocks," southern Idaho
(October 3, 1868).

1. *Corvus corax carnivorus*. Common.
2. *Gymnokitta cyanocephala*. Abundant.
3. *Cyanocitta Floridana Woodhousii*. Abundant.
4. *Centrocercus urophasianus*. Common.
5. *Rhinogryphus aura*. Common.

k. Species found at Deep Creek, Northwestern Utah (Oct. 5, 1868.)

1. *Telmatodytes palustris paludicola*. Abundant.
2. *Geothlypis trichas*. Common.
3. *Zonotrichia leucophrys intermedia*. Abundant.
4. *Melospiza melodia fallax*. Abundant.
5. *M. Lincolnii*. Common.

V. EASTERN UTAH.⁴

a. Species breeding in the Salt Lake Valley (May 20-June 2, and
June 16-21, 1869).

1. *Turdus migratorius*.† Rare?
2. *Oreoscoptes montanus*. Common.
3. *Galeoscoptes Carolinensis*. Common.
4. *Sialia arctica*.† Common.
5. *Troglodytes ædon Parkmanni*. Common.
6. *Telmatodytes palustris paludicola*. Very abundant.
7. *Eremophila alpestris chrysolæma*. Common.
8. *Dendroica æstiva*. Abundant.
9. *Geothlypis trichas*. Common.
10. *Icteria virens longicauda*. Common.
11. *Setophaga ruticilla*. Common.

⁴ See Bulletin of the Essex Institute, V, Nov., 1873, pp. 168-173, for paper entitled "Notes on the Bird Fauna of the Salt Lake Valley and adjacent portions of the Wahsatch Mountains."

† Species so marked have been attracted from the adjoining mountains by the protection and accommodations provided by man.

BULLETIN

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REGULAR MEETING, MONDAY, JANUARY 18, 1875.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From E. J. Attinelli, New York, Jan. 5; F. H. Appleton, Boston, Jan. 7; W. S. Barton, Worcester, Jan. 14; Hayden Brown, West Newbury, Jan. 9; G. W. W. Dove, Andover, Jan. 9; D. A. Gleason, Boston, Jan. 16; Julia Ward Howe, Boston, Jan. 19; Jacob Leamon, Croton, Ohio, Dec. 29.

The LIBRARIAN reported the following additions to the library:—

By Donation.

COLE, Mrs. N. D. Salem Gazette for 1874.
GREEN, S. A., of Boston. Miscellaneous pamphlets, 21.
HUNT, T. F. Spirit of the Fair. 1 vol. 4to. 1864. Our Daily Fare. 1 vol. 4to. 1864. Hamilton's Genealogical Tables of the Hindus. 1 vol. folio.
PERKINS, SAM'L C., of Phila. Proceedings at the Laying of the Corner Stone of the New Public Buildings in Penn. Square, in Phila., July 4, 1874. 8vo pamph.
U. S. PATENT OFFICE. Official Gazette, Dec. 15, 22, 29.
WATERS, J. LINTON. The External Aspects of the Sun, by Prof. S. P. Langley.

By Exchange.

HARVARD COLLEGE. Forty-ninth Annual Report of the President. 1873-74.
HISTORICAL AND PHILOSOPHICAL SOCIETY OF OHIO. Annual Report. 1874.
ESSEX INST. BULLETIN. VII 3

NEW YORK GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Genealogical and Biographical Record. Jan., 1875. 8vo pamph.

NEW YORK LYCEUM OF NATURAL HISTORY. Annals, Vol. xi, Nos. 1-2, July, 1874.

ROYAL CORNWALL POLYTECHNIC SOCIETY. Forty-First Annual Report, 1873. 1 vol. 12mo.

PUBLISHERS. American Journal of Science and Art. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Public Spirit. Quaritch's Catalogue. Salem Observer. Salem Post.

The meeting was principally occupied in listening to a very interesting and instructive presentation of the subject of comb manufacturing, by Hayden Brown, Esq., of West Newbury, who has been engaged for many years in the business. He gave a detailed account of the process of the manufacture of horn combs, interspersed with many entertaining anecdotes and pithy sayings. The first combs made in America were manufactured by hand, and with rude implements, in 1759, by Enoch Noyes, of Newbury, a self-taught mechanic, who cut horn buttons and coarse combs as well as he was able. He continued at this business until 1778, when William Cleland, a deserter from Burgoyne's army, a comb-maker by profession and a skilful workman, sought out Mr. Noyes and engaged with him, greatly increasing the production of combs, the manufacture of which has been continued in Newbury to this day, and immensely increased by the use of the most ingenious machines, one of which, he stated, tended by a lad of twelve years, can do the work which formerly required thirty-five men, and with his present force of fifty men, he could turn out more and better combs than a regiment of men could a half or three-quarters of a century ago.

Mr. Brown thought the earliest combs used must have been made of wood. Specimens were exhibited of the crude horn, of the material after it had gone through the several processes required, and of the several varieties of combs manufactured, beautifully finished and polished.

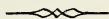
He referred to the immense number of cattle slaughtered every year, giving some interesting statistics to show where the horns required for such an immense manufacture came from, and stated some of his experiences abroad and at home in connection with the business. He was listened to with great attention, and the thanks of the Institute were voted to him for his entertaining and instructive address.

Mr. F. W. PUTNAM stated that combs made of various materials were in use among uncivilized nations, and mentioned the bronze combs of prehistoric times in Europe as similar to those now in use.

On motion of Mr. Putnam the thanks of the Institute were tendered to Mr. Brown for his remarks, and for his kindness in promoting the technological department of the Institute.

Arthur S. Gray, of Danvers, Jerome Horton Fiske and D. Henry Taylor of Salem, were duly elected resident members.

Adjourned.



REGULAR MEETING, MONDAY, FEBRUARY 1, 1875.

MEETING this evening at 7.30 o'clock. Vice President F. W. PUTNAM in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From J. W. Dean, Boston, Jan. 18. 21; F. H. Johnson, Andover, Jan. 13; J. F. Mayer, New York, Jan. 18; A. W. Morgan, New York, Jan. 28; A. T. Perkins, Boston, Jan. 21; Charles Phillips, Philadelphia, Jan. 20; R. Ridgway, Washington, D. C., Jan. 29.

Among the donations to the cabinets announced were the commission of a letter of marque, bearing the signatures of Madison and Munroe, presented by Rev. Mr. Atwood, and a unique Indian stone implement from Peabody, presented by Mr. John V. Stevens, for each of which thanks were voted to the donors.

Prof. A. GRAHAM BELL, now a resident in Salem, occupied the evening with a singularly interesting and curiously instructive address on the subject of speech, with illustrative experiments of various kinds, and the aid of Rev. E. C. Bolles with his camera. Prof. Bell has practically introduced into this country the system of Visible Speech invented by his father, Prof. A. M. Bell of University College, London. Mr. Bell, in conjunction with Dr. Clarence J. Blake, the aurist, of Boston, has conducted a series of experiments, the remarkable results of which were now first exhibited to a public audience.

Mr. Bell had succeeded in using the *membrana tympani* of the human ear as a phonautograph. An ear from a dead subject had been experimented upon. A small style of hay was attached to one of the ossiculæ, and a hearing tube was inserted in the outer ear. When any sound was uttered into the tube, the *membrana tympani* was set in vibration, and its motion was communicated to the style. This latter was then caused to record its vibration upon a plate of smoked glass passed rapidly underneath. Mr. Bell stated that each different vowel uttered into the tube caused the style to trace a different curve upon the glass. A large number of these tracings were exhibited to the audience by means of the camera.

Mr. Bell was provided with accurate representations and models of the vocal organs and organs of hearing so as clearly to point out their several parts, even to the

most delicate, and showed how sound was produced. He averred that each note was not a single tone, as it appears to be, but a composite of several, including the fundamental, or loudest, with the addition of overtones and undertones; there was no such thing as a tone pure and simple. He explained the pitch, the quality, timbre, and resonance of tones, and showed how they were produced. He showed that, as ripples are produced in the water, so wave ripples are produced in the air by different sounds, each sound causing a combination of wavelets, the curves of which can be made visible to the eye and many of which are of exceeding beauty. These were exhibited to the audience by means of a gas jet, whose vibrations were reflected in a mirror, through an ingeniously contrived apparatus, the manometric capsule invented by Scott and Kœnig. He explained how the notes of different musical instruments operated in the vibrations of the air, and what caused the differences in the sounds. In short, he gave a most attractive and instructive exposition of the mysteries of speech as it affects the air, the vocal organs, and the ear, and was listened to with the most absorbed attention.

After some complimentary remarks from Mr. W. P. UPHAM and the presiding officer, the thanks of the audience were unanimously voted to Prof. Bell for his able and excellent lecture.

LISTS OF BIRDS OBSERVED AT VARIOUS LOCALITIES CONTIGUOUS
TO THE CENTRAL PACIFIC RAILROAD, FROM SACRAMENTO
CITY, CALIFORNIA, TO SALT LAKE CITY, UTAH.

BY ROBERT RIDGWAY.

[Continued from page 24.]

12. *Pyranga Ludoviciana*. Common.
13. *Progne subis*.† Common.
14. *Petrochelidon lunifrons*.† Abundant.
15. *Tachycineta bicolor*.† Common.
16. *Hirundo horreorum*.† Common.
17. *Cotyle riparia*. Common.
18. *Stelgidopteryx serripennis*. Abundant.
19. *Vireosylvia gilva Swainsoni*. Abundant.
20. *Carpodacus frontalis*. Common.
21. *Chrysomitris tristis*. Common?
22. *Passerculus savanna alaudinus*. Common.
23. *Coturniculus passerinus perpallidus*. Common.
24. *Melospiza melodia fallax*. Common.
25. *Poospiza bilineata*. Common.
26. *Spizella Breweri*. Abundant.
27. *S. socialis Arizonae*. Common.
28. *Chondestes grammacus*. Abundant.
29. *Hedymeles melanocephalus*. Common.
30. *Cyanospiza amœna*. Common.
31. *Pipilo erythrophthalmus megalonyx*. Abundant.
32. *Dolichonyx oryzivorus*. Common?
33. *Molothrus pecoris*. Common.
34. *Agelaius phœniceus*. Very abundant.
35. *Xanthocephalus icterocephalus*. Very abundant.
36. *Sturnella neglecta*. Common.
37. *Icterus Bullocki*. Common.
38. *Cyanocitta Floridana Woodhousii*. Rare?
39. *Tyrannus verticalis*. Abundant.
40. *T. Carolinensis*. Common.
41. *Sayornis Sayus*. Common.
42. *Contopus Richardsoni*. Abundant.
43. *Empidonax pusillus*. Abundant.
44. *Antrostomus Nuttalli*. Common.
45. *Chordeiles popetue Henryi*. Common.
46. *Selasphorus platycercus*.† Common.
47. *Trochilus Alexandri*.† Common.
48. *Ceryle alcyon*. Common.

49. *Melanerpes erythrocephalus*. One specimen.
50. *Colaptes auratus Mexicanus*. Common.
51. *Speotyto cunicularia hypogæa*. Rare?
52. *Circus cyaneus Hudsonius*. Common.
53. *Falco saker polyagrus*. Common.
54. *F. sparverius*. Abundant.
55. *Buteo Swainsoni*. Abundant.
56. *Zenaidura Carolinensis*. Abundant.
57. *Centrocercus urophasianus*. Common?
58. *Pediocætes phasianellus Columbianus*. Common?
59. *Ægialitis vociferus*. Common.
60. *Æ. cantianus nivosus*. Very abundant.
61. *Recurvirostra Americana*. Very abundant.
62. *Himantopus nigricollis*. Very abundant.
63. *Steganopus Wilsoni*. Common.
64. *Ereunetes pusillus*. Common.
65. *Actodromus minutilla*. Common.
66. *Tringoides hypoleucus macularius*. Common.
67. *Symphemia semipalmata*. Abundant.
68. *Numenius longirostris*. Abundant.
69. *Ibis gnarauna*. Abundant.
70. *Ardea herodias*. Common.
71. *Herodias alba egretta*. Rare?
72. *Botaurus minor*. Common.
73. *Grus Canadensis*. Common.
74. *Rallus Virginianus*. Common.
75. *Porzana Carolina*. Common.
76. *Fulica Americana*. Abundant.
77. *Anas boschas*. Abundant.
78. *Dafila acuta*. Common?
79. *Chaulelasmus streperus*. Abundant.
80. *Mareca Americana*. Abundant.
81. *Spatula clypeata*. Abundant?
82. *Querquedula cyanoptera*. Abundant.
83. *Q. discors*? Rare?
84. *Nettion Carolinensis*. Rare?
85. *Erismatura rubida*. Common.
86. *Graculus dilophus*. Common.
87. *Sterna regia*. Common.
88. *S. Forsteri*. Abundant.
89. *Hydrochelidon fissipes*. Abundant.
90. *Podiceps occidentalis*. Abundant.
91. *P. auritus Californicus*. Abundant.
92. *Podilymbus podiceps*. Common.

b. Species breeding only on the islands in Great Salt
Lake (June, 1869).

1. *Branta Canadensis*. Common.
2. *Pelecanus erythrorhynchus*. Abundant.
3. *Larus Californicus*. Very abundant.

c. List of the species breeding in Parley's Park, Wahsatch Mountains,
Utah (June 23-July 2; July 16-Aug. 16, 1869).

1. *Turdus migratorius*. Common.
2. *T. Swainsoni*. Abundant.
3. *T. Pallasi Auduboni*. Common.
4. *Galeoscoptes Carolinensis*. Common.
5. *Sialia arctica*. Common.
6. *Cinclus Mexicanus*. Common.
7. *Regulus calendula*. Common.
8. *Parus montanus*. Common.
9. *Sitta Carolinensis aculeata*. Rare.
10. *S. Canadensis*. Rare.
11. *S. pusilla pygmæa*. Rare.
12. *Certhia familiaris fusca*. Rare.
13. *Troglodytes ædon Parkmanni*. Abundant.
14. *Telmatodytes palustris paludicola*. Common.
15. *Eremophila alpestris (chrysolæma?)*. Common.
16. *Helminthophaga celata*. Common.
17. *H. Virginiae*. Abundant.
18. *Dendroica æstiva*. Abundant.
19. *D. Auduboni*. Common.
20. *D. nigrescens?* Rare.
21. *Geothlypis Macgillivrayi*. Abundant.
22. *G. trichas*. Rare.
23. *Icteria virens longicauda*. Very rare.
24. *Myiodiocetes pusillus*. Rare.
25. *Setophaga ruticilla*. Rare.
26. *Pyrrhula ludoviciana*. Rare.
27. *Progne subis*. Abundant.
28. *Petrochelidon lunifrons*. Common.
29. *Hirundo horreorum*. Common.
30. *Tachycineta bicolor*. Abundant.
31. *T. thalassina*. Common.
32. *Cotyle riparia*. Common.
33. *Stelgidopteryx serripennis*. Common.
34. *Vireosylva gilva Swainsoni*. Abundant.

35. *Lanivireo solitaria plumbea*. Rare.
36. *Collurio Ludoviciana excubitoroides*. Common.
37. *Carpodacus Cassini*. Abundant.
38. *C. frontalis*. Common.
39. *Chrysomitris tristis*. Rare.
40. *C. psaltria*. Rare.
41. *C. pinus*. Very abundant.
42. *Passerculus savanna alaudinus*. Rare.
43. *Pooecetes gramineus confinis*. Common.
44. *Coturniculus passerinus perpallidus*. Rare.
45. *Melospiza Lincolnii*. Common.
46. *M. melodia fallax*. Abundant.
47. *Junco caniceps*. Common.
48. *Spizella socialis Arizonae*. Abundant.
49. *S. Breweri*. Common.
50. *Zonotrichia leucophrys*. Abundant.
51. *Chondestes grammacus*. Common.
52. *Passerella iliaca schistacea*. Abundant.
53. *Calamospiza bicolor*. One specimen.
54. *Hedymeles melanocephalus*. Common.
55. *Cyanospiza amoena*. Common.
56. *Pipilo erythrophthalmus megalonyx*.
57. *P. chlorura*.
58. *Molothrus pecoris*.
59. *Agelaius phoeniceus*.
60. *Xanthocephalus icterocephalus*.
61. *Icterus Bullocki*.
62. *Sturnella magna neglecta*.
63. *Scolecophagus cyanocephalus*.
64. *Corvus corax carinivorus*.
65. *Cyanocitta Florida Woodhousii*.
66. *Cyanura Stelleri macrolopha*.
67. *Picicorvus Columbianus*.
68. *Tyrannus verticalis*.
69. *T. Carolinensis*.
70. *Myiarchus crinitus cinerascens*.
71. *Contopus borealis*.
72. *C. Richardsoni*.
73. *Empidonax obscurus*.
74. *E. flaviventris difficilis*.
75. *E. pusillus*.
76. *Antrostomus Nuttalli*.
77. *Chordeiles popetue Henryi*.
78. *Trochilus Alexandri*.
79. *Stellula calliope*?

80. *Selasphorus platycercus*.
81. *Ceryle alcyon*.
82. *Picus villosus* *Harrisi*.
83. *P. pubescens* *Gairdneri*.
84. *Sphyrapicus varius nuchalis*.
85. *Sphyrapicus thyroideus*. Rare.
86. *Colaptes auratus Mexicanus*. Common.
87. *Bubo Virginianus arcticus*. Rare.
88. *Falco saker polyagrus*. Rare.
89. *F. sparverius*. Common.
90. *Circus cyaneus Hudsonius*. Rare.
91. *Nisus Cooperi*. Rare.
92. *N. fuscus*. Rare.
93. *Buteo borealis calurus*. Common.
94. *B. Swainsoni*. Abundant.
95. *Archibuteo lagopus Sanctijohannis*. Rare.
96. *Aquila chrysaetos Canadensis*. Common.
97. *Rhinogryphus aura*. Common.
98. *Zenaidura Carolinensis*. Abundant.
99. *Canace obscura*. Abundant.
100. *Bonasa umbellus umbelloides*. Rare?
101. *Centrocercus urophasianus*. Common.
102. *Pediocætes phasianellus Columbianus*. Common.
103. *Ægialitis vociferus*. Common.
104. *Gallinago gallinaria Wilsoni*. Common.
105. *Ereunetes pusillus*. Rare.
106. *Actodromus minutilla*. Rare.
107. *Symphemia semipalmata*. Rare.
108. *Tringoides hypoleucos macularius*. Common.
109. *Rhyacophilus glareola solitarius*. Rare.
110. *Numenius longirostris*. Rare.
111. *Grus Canadensis*. Rare.
112. *Porzana Carolina*. Common.
113. *P. Jamaicensis?* Common.
114. *Fulica Americana*. Rare.
115. *Anas boschas*. Rare.
116. *Querquedula cyanoptera*. Rare.

d. Pack's Cañon, western spur of Uintah range (July 3-8, 1869).

The fauna of this locality was exactly like that of Parley's Park, with the exception that *Cyanura Stelleri macrolopha* was more abundant.

e. Kamas Prairie (July 9, 1869).

The only species seen in this grassy valley, which was not noticed elsewhere, was the *Actiturus Bartramius*.

f. Cañon of the Provo River (July 10, 1869).

The following species not found by us elsewhere were abundant among the willows bordering the river:

1. *Turdus fuscescens*.
2. *Parus atricapillus septentrionalis*.

There were also found *Setophaga ruticilla* and *Galeoscoptes Carolinensis* in plentiful numbers, and *Pica melanoleuca Hudsonica*, which in other localities in Utah was found to be rare or entirely wanting.

CATALOGUE OF THE BIRDS ASCERTAINED TO OCCUR IN NEVADA.

The following is a complete list of the birds known at the present time to occur within the limits of the State of Nevada. The number will doubtless be considerably increased in the course of time, when portions of the state not visited by us shall have been explored. Those marked with an asterisk (*) breed within the limits of the State; those distinguished by a dagger (†) belong to the western portion, and those with a ‡ are more abundant in the eastern part, being stragglers from the Rocky Mountains.

- *1. *Turdus migratorius* L.
- 2. *T. Pallasii* Cab., *var. nanus* Aud.†
- 3. *T. Swainsoni* Cab.‡
- *4. *T. Swainsoni* Cab., *var. ustulatus* Nutt.†
- *5. *Oreoscoptes montanus* (Townsend.).
- *6. *Sialia Mexicana* Sw.†
- *7. *S. arctica* Sw.
- *8. *Cinclus Mexicanus* Sw.
- *9. *Regulus calendula* (L.).
- 10. *R. satrapa* Licht.
- *11. *Lophophanes inornatus* (Gamb.).†
- *12. *Parus montanus* Gamb.
- 13? *P. atricapillus* L., ‡ *var. septentrionalis* Harris.
- *14. *Psaltiriparus minimus* (Townsend.), *var. plumbeus* Baird.
- 15? *Psaltiriparus melanotis* (Hartl.)‡
- *16. *Sitta Carolinensis* Gm., *var. aculeata* Cassin.‡
- *17. *S. Canadensis* L.
- *18. *S. pusilla* Lath., ‡ *var. pygmæa* Vig.
- *19. *Certhia familiaris* L., *var. fusca* Bart.
- *20. *Campylorhynchus brunneicapillus* (Lafr.).
- *21. *Salpinctes obsoletus* (Say).
- *22. *Catherpes Mexicanus* (Sw.), *var. conspersus* Ridgw.

- *23. *Troglodytes ædon* V., *var. Parkmanni* Aud.
- 24. *T. parvulus* Koch, *var. hyemalis* Wils.
- *25. *Telmatodytes palustris* (Wils.), *var. paludicola* Baird.
- 26. *Anthus Ludovicianus* (Gm.).
- *27. *Helminthophaga Virginiae* Baird.†
- 28. *H. ruficapilla* (Wils.).†
- *29. *H. celata* (Say).
- 30. *H. celata* (Say), *var. lutescens* Ridgw.†
- *31. *Dendroica æstiva* (Gm.).
- 32? *D. occidentalis* (Townsend.).
- 33. *D. Townsendi* (Nutt.).
- *34. *D. nigrescens* (Townsend.).†
- *35. *D. Auduboni* (Townsend.).
- *36. *Geothlypis trichas* (L.).
- *37. *G. Philadelphia* (Wils.), *var. Macgillivrayi* Aud.
- *38. *Icteria virens* (L.), *var. longicauda* Lawr.
- *39. *Myiiodioides pusillus* (Wils.).
- 40. *M. pusillus* (Wils.), *var. pileolata* Pall.†
- *41. *Pyranga Ludovicianus* (Wils.).
- *42. *Hirundo horreorum* Barton.
- *43. *Tachycineta bicolor* (V.).
- *44. *T. thalassina* (Sw.).
- *45. *Cotyle riparia* (L.).
- *46. *Stelgidopteryx serripennis* (Aud.).
- *47. *Petrochelidon lunifrons* (Say).
- *48. *Progne subis* (L.).
- 49. *Ampelis cedrorum* (V.).†
- *50. *Phænopoela nitens* (Sw.).
- *51. *Myiadestes Townsendi* (Aud.).
- *52. *Vireosylva gilva* (V.), *var. Swainsoni* Baird.
- 53. *Lanivireo solitaria* (Wils.).
- 54. *L. solitaria* (Wils.), *var. Cassini* Baird.†
- *55. *L. var. plumbeus* Coues.†
- *56. *Collurio Ludovicianus* (L.), *var. excubitoroides* Sw.
- *57. *Carpodacus Cassini* Baird.
- *58. *C. frontalis* (Say).
- *59. *Loxia leucoptera* (Wils.).
- 60. *L. curvirostra* L., *var. Americana* (Wils.).
- 61. *Leucosticte tephrocotis* Sw., *var. littoralis* Baird.
- *62. *Chrysomitris tristis* (L.).
- *63. *C. pinus* (Wils.).
- 64. *Plectrophanes lapponicus* (L.).
- *65. *Passerculus savanna* (Wils.), *var. alaudinus* Bonap.
- *66. *Poocetes gramineus* (Gm.), *var. confinis* Baird.

- *67. *Coturniculus passerinus* (Wils.), *var. perpallidus* Ridgw.
- *68. *Melospiza Lincolni* (Aud.).
- *69. *M. melodia* (Wils.).†
- *70. *var. fallax* Baird.
- *71. *var. Heermanni* Baird.†
- 72. *var. guttata* Nutt.
- *73. *Poospiza bilineata* (Cass.).
- *74. *P. Belli* (Cass.), *var. Nevadensis* Ridgw.
- *75. *Junco hyemalis* (L.), *var. Oregonus* (Townns.)†
- 76. *Spizella monticola* (Gm.).
- *77. *S. socialis* (Wils.), *var. Arizonae* Coues.
- *78. *S. Breweri* (Cass.).
- 79. *Zonotrichia leucophrys* (Forst.).†
- *80. *Z. leucophrys* (Forst.), *var. intermedia* Ridgw.†
- 81. *Z. coronata* (Pall.).†
- *82. *Chondestes grammacus* (Say).
- *83. *Passerella iliaca* (Merrem),† *var. schistacea* Baird.
- *84. *Passerella iliaca* (Merrem), *var. megarhynchus* Baird.†
- *85. *Hedymeles melanocephalus* (Sw.).
- *86. *Cyanospiza amœna* (Say).
- *?87. *Guiraca cœrulea* (L.).
- *88. *Pipilo erythrophthalmus* (L.), *var. Oregonus* Bell.†
- *89. *var. megalonyx* Baird.†
- *90. *P. chlorurus* (Townns.).
- *91. *Eremophila alpestris* (Forst.).
- 92. *E. alpestris* (Forst.), *var. leucolæma* Coues.
- *93. *var. chrysolæma* Wagl.
- 94. *Dolichonyx oryzivorus* (L.),† *var. albinucha* Ridgw.
- *95. *Agelaius phœniceus* (L.).
- *96. *A. phœniceus* (L.), *var. gubernator* Wagl.†
- *97. *anthocephalus icterocephalus* (Bonap.).
- *98. *Molothrus pecoris* (Gm.).
- *99. *Sturnella magna* (L.), *var. neglecta* Aud.
- *100. *Icterus Bullocki* (Sw.).
- *101. *Scolecophagus cyanocephalus* (Wagl.).
- *102. *Corvus corax* L., *var. carnivorus* Bartr.
- 103. *C. Americanus* Aud.
- *104. *Picicorvus Columbianus* (Wils.).
- *105. *Gymnokitta cyanocephala* Max.
- *106. *Pica melanoleuca* V., *var. Hudsonica* Sab.
- *107. *Cyanura Stelleri* (Gm.),† *var. frontalis* Ridgw.
- *108. *Cyanocitta Floridana* (Bartr.), *var. Californica* Vig.
- *109. *var. Woodhousii* Baird.†
- *110. *Tyrannus Carolinensis* (L.).

- *111. *T. verticalis* Say.
- *112. *Myiarchus crinitus* (L.), *var. cinerascens* Lawr.
- *113. *Sayornis Sayus* (Bonap).
- *114. *Contopus borealis* (Sw.).
- *115. *C. Richardsoni* (Sw.).
- *116. *Empidonax pusillus* (Sw.).
- *117. *Empidonax flaviventris* Baird, *var. difficilis* Baird.
- *?118. *E. Hammondi* Baird.
- *119. *E. obscurus* (Sw.).
- *120. *Antrostomus Nuttalli* (Aud.).
- *121. *Chordeiles popetue* (V.), *var. Henryi* Cass.
- *122. *Panyptila saxatilis* (Woodh.).‡
- *123. *Nephæcetes niger* (Gm.), *var. borealis* Kennerly.†
- *124. *Chætura Vauxi* (Townsend).†
- *125. *Trochilus Alexandri* Bourc.
- *126. *Selasphorus rufus* (Gm.).
- *127. *S. platycercus* (Sw.).
- *128. *Stellula calliope* Gould.
- *129. *Ceryle alcyon* (L.).
- *130. *Coccyzus Americanus* (L.).
- *131. *Picus albolarvatus* (Cass.).†
- *132. *P. villosus* L., *var. Harrisii* Aud.
- *133. *P. pubescens* L., *var. Gairdneri* Aud.
- 134. *Picoides arcticus* (Sw.).
- *135. *Sphyrapicus varius* (L.), *var. nuchalis* Baird.
- *136. *var. ruber* Gm.†
- *137. *S. thyroides* (Cass.).
- *138. *Melanerpes torquatus* (Wils.).
- 139. *Colaptes auratus* (L.), *var. hybridus* Baird.
- *140. *var. Mexicanus* Sw.
- *?141. *C. chrysoides* Malh.
- *142. *Bubo Virginianus* (Gm.), *var. Arcticus* Sw.
- *143. *Otus vulgaris* (L.), *var. Wilsonianus* Less.
- 144. *Nyctale acadica* (Gm.).
- *145. *Speotyto cunicularia* (Mol.), *var. hypugæa* Bonap.
- *146. *Falco communis* Gm., *var. anatum* Bonap.
- *147. *F. saker* Schl., *var. polyagrus* Cass.
- *148. *F. Columbarius* L.
- *149. *Falco sparverius* L.
- *150. *Pandion haliaëtus* (L.), *var. Carolinensis* Gm.
- *151. *Circus cyaneus* L., *var. Hudsonius* L.
- *152. *Nisus Cooperi* (Bonap.).
- *153. *N. fuscus* (Gm.).
- *154. *Buteo borealis* (Gm.), *var. calurus* Cass.

- *155. *B. Swainsoni* Bonap.
- *156. *Archibuteo ferrugineus* (Licht.).
- *157. *A. lagopus* (Brunn.), *var. Sancti-Johannis* Gm.
- *158. *Aquila chrysaëtos* (L.), *var. Canadensis* L.
- *159. *Haliaëetus leucocephalus* (L.).
- *160. *Rhinogryphus aura* (L.).
- 161. *Ectopistes migratoria* (L.).‡
- *162. *Zenaidura Carolinensis* (L.).
- *163. *Canace obscura* (Say).
- *164. *Bonasa umbellus* (L.), *var. umbelloides* Dougl.‡
- *165. *Pediocetes phasianellus* (L.), *var. Columbianus* Ord.
- *166. *Centrocercus urophasianus* (Bonap.).
- *167. *Oreortyx pictus* (Dougl.), † *var. plumifera* Gould.
- *168. *Ægialitis vociferus* (L.).
- *169. *Recurvirostra Americana* Gm.
- *170. *Himantopus nigricollis* V.
- *171. *Steganopus Wilsoni* (Sab.).
- *172. *Gallinago gallinaria* (Gm.), *var. Wilsoni* Temm.
- *173. *Ereunetes pusillus* (L.).
- 174. *Actodromus Bairdi* Coues.
- *175. *A. minutilla* (V.).
- 176. *Pelidna alpina* (L.), *var. Americana* Cass.
- *177. *Symphemia semipalmata* (Gm.).
- *178. *Rhyacophilus glareola* (L.), *var. solitarius* Wils.
- *179. *Tringoides hypoleucus* (L.), *var. macularius* L.
- *180. *Numenius longirostris* (Wils.).
- 181. *Tantalus loculator* L.
- *182. *Ibis guarauna* (Gm.).
- *183. *I. thalassinus* Ridgw. †
- *184. *Ardea herodias* L.
- 185. *Herodias alba* (L.), *var. egretta* Gm.
- *186. *Nyctiardea grisea* (L.), *var. nævia* Bodd.
- *187. *Botaurus minor* (Gm.).
- *188. *Ardetta exilis* (Gm.).
- *189. *Grus Canadensis* (L.).
- *190. *Rallus Virginianus* L.
- *191. *Porzana Carolina* (L.).
- *192? *P. Jamaicensis* (Gm.).‡
- *193. *Fulica Americana* Gm.
- 194. *Cygnus buccinator* Rich.
- 195. *Anser hyperboreus* Pall.
- *196. *Branta Canadensis* (L.).
- 197. *B. Hutchinsi* Rich.
- 198. *B. bernicla* (L.), *var. nigricans* Lawr.

- *199. *Anas boschas* L.
- *200. *Chaulelasmus streperus* (L.).
- *201. *Mareca Americana* (Gm.).
- *202. *Nettion Carolinensis* (Gm.).
- *203. *Querquedula cyanoptera* (V.).
- *204. *Q. discors* (L.).
- *205. *Dafila acuta* (L.).
- *206. *Spatula clypeata* (L.).
- 207. *Aix sponsa* (L.).
- 208. *Fulix marila* (L.).
- 209. *F. marila* (L.), *var. affinis* Eyton.
- 210. *F. collaris* (Donov.).
- 211. *Aythya vallisneria* (Wils.).
- 212. *A. ferina* (L.), *var. Americana* Eyton.
- 213. *Bucephala albeola* (L.).
- 214. *B. clangula* (L.), *var. Americana* Bonap.
- *215. *Erismatura rubida* (Wils.).
- 216. *Mergus merganser* (L.), *var. Americanus* Cass.
- 217. *Mergus serrator* L.
- 218. *Lophodytes cucullatus* (L.).
- *219. *Pelecanus erythrorhynchus* Gm.
- *220. *Graculus dilophus* (Sw.).
- *221. *Larus argentatus* Brünn., *var. Californicus* Lawr.
- 222. *L. Delawarensis* Ord.
- *223. *Sterna regia* Gambel.
- *224. *S. Forsteri* Nutt.
- *225. *Hydrochelidon fissipes* (L.).
- *226. *Æchmophorus occidentalis* (Lawr.)
- *227. *Podiceps auritus* (L.), *var. Californicus* Heerm.
- *228. *Podilymbus podiceps* (L.).

Total number of species known to breed in Nevada, 179.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., MARCH, 1875. No. 3.

One Dollar a Year in Advance. Ten Cents a Single Copy.

QUARTERLY MEETING, WEDNESDAY, FEB. 10, 1875.

MEETING this afternoon at three o'clock. VICE PRESIDENT F. W. PUTNAM in the chair. Records of the preceding quarterly and regular meetings were read.

Frank L. Smith, of Salem, was elected a resident member.

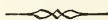
Mr. PUTNAM mentioned that the Misses Mary E. and Abby O. Williams, of Salem, would be willing to deposit, in the rooms of the Institute, temporarily, their valuable collection of paintings, many of which were copied by them from the "old masters," during a residence in Rome of several years.

After some conversation, the subject was referred to the Curators of the Department of Art, to make such arrangements with the Misses Williams as may be deemed advisable; on the understanding that the collection shall be

properly cared for by the curators, and that the Institute be not held responsible in case of fire or accident; also to tender to the Misses Williams the sincere thanks of the Institute for this liberal proposal.

The committee appointed at a previous meeting presented as their report a new draft of the Constitution and By-laws of the Institute. After some discussion it was

Voted, That a copy of the report be placed in the rooms of the Institute, and that the same be presented at the Annual Meeting in May, for further action.



REGULAR MEETING, MONDAY, FEBRUARY 15, 1875.

MEETING this evening at 7.30 o'clock. VICE PRESIDENT F. W. PUTNAM in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From E. J. Attinelli, New York, Feb. 6; Francis H. Appleton, Boston, Feb. 13; Charles H. Bell, Exeter, N. H., Feb. 5; E. P. Boon, New York, Feb. 2; John M. Bradbury, Ipswich, Feb. 1, 4; C. H. Dall, Boston, Feb. 13; W. H. Dall, Washington, Feb. 1; George Haskell, Ipswich, Feb. 11; A. H. Hoyt, Boston, Feb. 8; Joseph K. Jenness, Haverhill, Feb. 12; Jacob Leamon, Croton, Ohio, Jan. 25; J. H. Leavitt, Feb. 2; E. J. Maynard, Newtonville, Feb. 11; Henry Morton, Hoboken, N. J., Jan. 26; J. W. Moulton, Feb. 10; Nathaniel Paine, Worcester, Feb. 12; W. S. Perry, Geneva, N. Y., Feb. 9; B. Perley Poore, Indian Hill Farm, near Newburyport, Feb. 1; Cyrus Woodman, Cambridge, Feb. 10; Bern, Die Naturforschende Gesellschaft, Aug. ; Dresden, K. Leopoles caro, Deutschen Acad. der Naturforschende, Nov. 17; Emden, Naturforschende Gesellschaft, Sept. 11; Freiburg, Die Naturforschende Gesellschaft, Sept. 8; Genevé Société de Physique et d' Histoire Naturelle, Sept. 15; Neuchatel Société des Sciences Naturelles, Oct. 19; Yale College, Feb. 9; Zurich, Naturforschende Gesellschaft, Oct. 1.

The LIBRARIAN reported the following additions to the library:—

By Donation.

- BOLLES, E. C. Miscellaneous pamphlets, 5.
 HUMPHREYS, Brig. Gen. A. A. Annual Report of the Chief of Engineers. Pts. 1, 2, 1874. 2 vols. 8vo.
 LEE, JOHN C. Commercial Bulletin, Jan. 2, 9, 16, 1875.
 MASS. HORTICULTURAL SOCIETY. Schedule of Prizes offered by the Mass. Horticultural Society for 1875.
 PEABODY INSTITUTE, Danvers. Seventh Annual Report of the Trustees of the, Year ending March 31, 1874.
 PHILLIPS, CHAS., of Germantown, Penn. Railroad Report of Penn., 1863. 1 vol. 8vo. The American Historical Record, 8 numbers. Miscellaneous pamphlets, 91. Almanacs, 1870, 1871.
 PUTNAM, H. W. Directory of Peabody, Danvers, Marblehead, 1873. 1 vol. 8vo. N. E. Business Directory, 1873. 1 vol. 8vo. Essex County Directory, 1873. 1 vol. 8vo. Mass. Register and Business Directory, 1872. 1 vol. 8vo.
 ROPES, W. L., of Andover, Mass. Catalogue of Andover Theol. Seminary, 1874-75.
 U. S. PATENT OFFICE. Official Gazette, Jan. 5, 12, 1875.
 WATERS, J. L. Miscellaneous pamphlets, 50.
 WILLIAMS, JAMES, of Columbus, Ohio. Annual Report of the Auditor of the State of Ohio, 1874. 1 vol. 8vo.

By Exchange.

- ACCADEMIA D' AGRICOLTURA COMMERCIO ED ART DI VERONA. Memoire, Vol. L, II Serie, Fasc. II, 1874. Vol. L, II Serie, Fasc. I, II, 1874.
 CROSSE ET FISCHER. Journal de Conchyliol. 3e Série, Tome xiv, No. iv, 1874.
 INSTITUT HISTORIQUE, PARIS. L' Investigateur. 40 Année. N^o. vi, Nov., 1874.
 KAISERLICHE LEOPOLDINISCH-CAROLINISCHE DEUTSCHEN AKADEMIE DER NATURFORSCHER IN DRESDEN. Leopoldina, Heft vii, viii, ix, 1871, 1872, 1873.
 NATURFORSCHENDE GESELLSCHAFT IN BERN. Mittheilungen, Nos. 812-827, 1873.
 NATURFORSCHENDE GESELLSCHAFT IN FREIBURG. Berichte, Band vi, Heft II, III, 1873. 2 pamphlets.
 NATURFORSCHENDE GESELLSCHAFT, ZURICH. Vierteljahrsschrift, Jahrg. xviii, 1873.
 NATURFORSCHENDE GESELLSCHAFT IN EMDEN. Jahresbericht, 1873. 8vo. 1874.
 NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. New England Historical and Genealogical Register, Jan., 1875.
 SOCIÉTÉ D' ACCLIMATION, Paris. Bulletin Mensuel, 3me Série, Tome i, No. 10, Oct., 1874.
 SOCIÉTÉ D' ANTHROPOLOGIE, Paris. Bulletins, Tome ix, 11e Série, 2e Fascicule, 1874.
 SOCIÉTÉ DES SCIENCES NATURELLES, Neuchatel. Bulletin, Tome x, 1873-4. Memoires, Tome iv, 2nd pt., 1874.
 SOCIÉTÉ DE PHYSIQUE ET D' HISTOIRE NATURELLE, Genève. Memoires, Tome xxiii, 2nd pt., 1873-74.
 PUBLISHERS. American Journal of Science. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Public Spirit. Sailors' Magazine and Seamen's Friend. Salem Post. Salem Observer.

Mrs. C. A. Carlton, of Salem, was elected a resident member.

REV. GEORGE BATCHELOR presented a memoir of our late associate, HON. BENJAMIN F. BROWNE, of Salem. Referred to the publication committee.

MR. JOHN ROBINSON read the following paper, illustrating the same with diagrams and specimens :—

FERNS OF ESSEX COUNTY, MASS.

ONE of the most important objects of the Essex Institute is the collecting and investigation of Essex County products of every sort. Oakes, Russell, Nichols, Fowler, Putnam, Packard, Hyatt, Tracy and others have each in turn worked at this, and all seem to have agreed in leaving the ferns for some one else to look up. The rocks, insects, fishes, birds, mammals, early inhabitants and Indian remains, flowering plants, mosses, and lichens, have been more or less fully reported upon ; but the ferns, even so abundant and conspicuous as they are, were omitted. Searching the publications of Essex County societies, no notice or list of ferns is to be found ; even Tracy's "Plants of Lynn" stops just upon them. I have for some years been interested in these curious and beautiful plants, and have given special notice to those in our county and have searched myself with friends in the following localities, thoroughly or in part :—Lynn, Swampscott, Saugus, Lynnfield, Danvers, Peabody, Salem, Beverly, Manchester, Essex, Gloucester, Rockport, Ipswich, Newbury, North Andover, Bradford, Wenham, Topsfield, Marblehead, Groveland, Middleton, and have had the assistance of Mrs. C. N. S. Horner, of Georgetown, who kindly gives me the localities for that region, about which I know very little myself.

Among the older botanists, now gone, who gave ferns some particular notice, was William Oakes, of Ipswich, and judging from looking over the beautifully prepared

specimens he left to tell of his earnest labor as a botanist, I should think he had noticed about two-thirds of our county ferns.

The arrangement in this paper is according to Gray's botany, fifth edition, where full descriptions of each species will be found.¹

We have represented in the county, so far as is now known, sixteen genera, including twenty-nine species and about eight book varieties. A very few species may possibly be added after a careful search, but that is extremely doubtful.

I will take these species in order, and notice each separately, commencing with:—

1. ONOCLEA SENSIBILIS L.

Sensitive Fern.

So called on account of the habit of quickly turning black after the first frosts. The fertile and sterile fronds are entirely different in appearance, the former not showing themselves till August and then becoming rigid and remaining perfect almost through a second season, while the sterile fronds commence to unfold early in May, are very broad, and perish at the first frost. Common everywhere.

2. A very curious abnormal form is the var. *obtuselobata* of Torrey, not a true variety but only an occasional state of a frond of the ordinary plant. This illustrates how the sterile and fertile fronds in dimorphous ferns can be shown to resemble each other and is only a half-way state between sterile and fertile, so to speak. Frequent, with No. 1.

3. STRUTHIOPTERIS GERMANICA Willd.

Ostrich Fern.

This is the tallest of all New England ferns, growing to a height of six feet, and yet it is one of the most graceful of our species. It is not coarse, and spreads by numerous underground runners, filling whole fields in parts of New Hampshire and Vermont, where I have

¹ It should be noted that this paper was illustrated by perfect herbarium specimens of each species and variety referred to, rendering botanical descriptions unnecessary. English names are added for each species, though many are poor enough.

walked among plants, though not of the largest growth, with only my head above them. Like the last, the fruit spike is separate and rigid, often found the second year black and persistent, while the spikes of that season are new and green. I included this in the list of Essex County ferns, as the place from which I knew it was but just beyond the county line in North Reading, towards Middleton, not nearer one town than the other. I have since heard from Mrs. Horner, who reports it from Georgetown; she, therefore, is first to add this truly noble fern to our county list.

4. WOODSIA ILVENSIS R. Br.

Hairy Woodsia.

This is a rare fern in Europe, but here is very abundant, particularly on the hills about Salem. A short, woolly plant growing in tufts. It is found in Danvers, Swampscott, Wenham, and in fact in almost every hilly town.

5. WOODSIA OBTUSA Torrey.

Blunt Woodsia.

Not so abundant as the last, taller and more delicate. The small forms resemble *Cystopteris fragilis*, with which it often grows. There is a fine locality for this at Peabody, on the Swampscott road, and it is to be found in Salem pastures, Beverly, Middleton and elsewhere.

6. DICKSONIA PUNCTIOBULA Kunze.

Hay-scented Fern.

This is the only American representative of a genus which in the tropics boasts of the noblest of tree ferns, including the *D. antarctica* of Tasmania, the trunk of which rises to the height of thirty or forty feet, crowned by a circle of enormous fronds, some even twenty feet to their tips. Our humble Dicksonia is one of our most common and yet most beautiful ferns. It grows by creeping, underground stems, and sometimes is found with fronds three or four feet high; the fruit is very small on the little lobes of the pinnules, the fronds are much dissected and almost always widest at the base. When crushed it has a very pleasant aromatic odor, and after a frost this is quite noticeable in the woods where the plants grow.

7. CYSTOPTERIS FRAGILIS Bernh.

Delicate Bladder Fern.

This will be found in old stone walls where the earth is banked up high at the back, and in damp, rocky woods or ravines. There are many fine localities in Salem, Beverly, Essex, Swampscott and else-

where. This is an early fern and often in dry seasons by August the fruit will have perfected and the fronds entirely have disappeared (it should be looked for in June). I found at Essex in September, 1873, a plant that, thinking the dry summer was its winter rest, had with the September rains again started; I collected several fine young fronds at that late date.

This varies considerably; the less cut form is var. *dentata*, but not approving of naming every variation, as some seem to do, the most prominent ones only are given in this list.

8. ADIANTUM PEDATUM L.

Maiden Hair.

By many considered our most beautiful fern, and when seen in the grand clumps two feet or more high, as I have seen them in this county at the fine locality in North Andover, one can hardly find in any conservatory a more elegant, graceful or delicate fern. It grows sparingly in Salem, Danvers, Lynnfield, Georgetown and some other places. In the western part of this state, Vermont and southward, it is found by the acre. It varies but slightly even in Californian specimens.

9. PTERIS AQUILINA L.

Eagle Fern. Bracken.

Common along railroad tracks and gravelly places skirting and in the woods. This is in England one of the rankest growing ferns, sometimes attaining a height of twelve feet. I think six feet from the ground to the tip, when lifted up, is the extreme that has been noticed here. Most beautifully crisped forms and often strange developments of the pinnules may be found in the county specimens, some of which approach the var. *caudata* which grows south.

10. WOODWARDIA VIRGINICA Smith.

Chain Fern.

(The fruit upon the underside of the fertile pinnules is in short lines, resembling the links of a chain.)

In searching for this fern I spent three days before finding it in a locality now nearly destroyed, known to Mr. Russell. Since then I have found it growing profusely around many ponds or in swamps at Beverly, Hamilton, Essex, Manchester, Wenham, Georgetown (Mrs. Horner), etc. This is the only fern I have ever observed growing *under water*. Many grow near the water, but this I have repeatedly found growing, even at low water seasons, with the rhizome creeping

out into the pond, with little if any earth over it, which seems at variance with the rest of the ferns hereabouts.

11. ASPLENIUM TRICHOMANES L.

Dwarf Spleenwort.

A charming little fern growing upon the rocks, with its black, thread-like roots working their way so deep into the crevices that it is with difficulty removed without breaking them off. This varies greatly in size, but in the cutting very slightly. Not rare; good localities in Peabody, Marblehead, Georgetown, etc.

12. ASPLENIUM EBENEUM Ait.

Ebony Spleenwort.

Found in pine woods near rocks, but not so much on and in them as No. 11, which in general style it resembles, although never to be mistaken for it. A much serrated form is frequently met with, and the fronds are often found split, forming a double apex. Found in nearly every town; fine localities in Beverly, Essex, etc.

13. ASPLENIUM THELYPTEROIDES Michx.

Silvery Spleenwort.

This is a rare fern with us but very abundant in Vermont and western Massachusetts, particularly near the eastern end of the Hoosac tunnel, on the path to the "twin cascades." The fruit on the fertile pinnules is very regular and distinct, a very beautiful object under the microscope. The only plant I know of this is at Swampscott. It is at Georgetown (Mrs. Horner), Lynnfield (Russell), and "with Mr. Oakes it was a favorite fern and found by him at Ipswich." (Prof. Tuckerman.)

14. ASPLENIUM FILIX-FÆMINA Bernh.

Lady Fern.

The most abundant and variable of all our ferns, except, perhaps, *Aspidium spinulosum*. It grows everywhere, in sun and shade, and often so much fruited that the fronds will look black. It sometimes is found nearly four feet high, and one quite marked variety has the lower pinnæ as long, if not longer than the rest, while in the common form they are conspicuously reduced.

Some will confound this with *Dicksonia*, when not in fruit, and with *Aspidium spinulosum*, but the difference will be readily seen upon examination. Common everywhere.

15. *ASPIDIUM ACROSTICHOIDES* Swartz.*Christmas Fern.*

It is found abundantly near the first pond on the road to the Chebacco house, Essex: also in Beverly woods; near the turnpike and floating bridge; Andover; Danvers, etc. This is a rigid, evergreen species, and is very abundant north and south; one of the best for decorative purposes, as it keeps well. There is some variation to the cutting of the fronds, and one is called var. *incisum*. The peculiar fruiting of this fern distinguishes it from all others of our species, hence the name *acrostichoides*, for the fruit dots becoming confluent, the pinnæ curl, and the whole looks as if one mass of spore cases, as it is with the genus *Acrostichum*, hence resembling *Acrostichum*, or *Acrostichoides*.

16. *ASPIDIUM THELYPTERIS* Swartz.*Marsh Fern.*

Formerly this fern was confused with *A. Noveboracense*, but the conspicuously reduced pinnæ of the latter, as well as the lighter color, should have been noticed as distinguishing points; it is also quite different in the fruiting. Found in every meadow and by every roadside as well as in deep woods and in bogs. Perfect specimens can be found in full fruit from *six inches to five feet high*, and from one inch to one foot wide. Where it grows exposed to the sun the pinnæ are curled up and quite angular, while in the shade they are less fruited, wide spreading and more delicate.

17. *ASPIDIUM NOVEBORACENSE* Swartz.*New York Fern.*

More delicate than the last, not revolute when well fruited, and growing in less wet places. Common in the woods. By the latter part of September this and the *Dicksonia* become, under favorable circumstances, pure white, and form a very beautiful addition to the decorating ferns for winter.

18. *ASPIDIUM SPINULOSUM* Swartz.*Prickly Toothed Wood Fern.*

This is the typical form of a most protean species, varying from plants perfectly fruited only six inches high to heavy forms four feet high; and in width from six inches on a plant four feet high to more than a foot on a plant but two feet high. And here is not all; the variations in cutting are as great as those of height and width. We

find it not twice pinnate and fully three times so, with fruit scarcely visible, and dots so large as to be plainly seen at quite a distance. Sometimes the lower pinnæ are much reduced, sometimes very much extended. To take prominent varieties one would at a glance pronounce them very different species, so much more do they vary in appearance than many species which are distinct; but I can show a suite of specimens which run so gradually from one to another that it will at once be seen that to draw a separating line would be quite impossible, and the best that can be done is to name the prominent forms as varieties. The typical plant is rare and as yet I have only found it at Essex. Doubtless other localities will be discovered.

19. Var. *intermedium*. The common form will be found in nearly every patch of woods.

20. Var. *dilatatum* is a larger and more cut form, most common at the mountain regions of New Hampshire. A near approach to it can be obtained at Essex, Beverly, Georgetown (Mrs. Horner), etc.

21. Var. *Boottii* is much more narrow, reduced at the base. This, to judge from the specimens I find, which are very numerous, seems to resemble much more closely *A. cristatum* than *A. spinulosum*. The sterile fronds particularly resemble each other in these two species and it is often very difficult to decide to which they belong. Is it possible that this can be a hybrid between *A. spinulosum* and *A. cristatum*? Found in shady, swampy land.

22. ASPIDIUM CRISTATUM Swartz.

Crested Buckler Fern.

Not so common as some varieties of the last. It grows in similar localities, but seldom more than one or two clumps in a place together. The fertile fronds are usually much taller than the sterile and perish during the winter, while the sterile ones of the previous year are found quite perfect the next spring.

Found in nearly every town in localities similar to the last.

23. ASPIDIUM MARGINALE Swartz.

Marginal or Evergreen Wood Fern.

(So called as the fruit is close to the edge or margin of the pinnule, and the fronds are often found as perfect in spring as they were before winter came.)

This fern is of a beautiful blue-green and is found in rocky woods, where the foliage is not thickest. The fronds are twice pinnate and occasionally found still more cut. Eight years since I collected in Swampscott a plant with very broad and much cut fronds. This I

have had under cultivation ever since. It keeps its distinct character, which is strikingly different from the ordinary form. For convenience I have ticketed herbarium specimens from this as var. *elegans*. Small forms scarcely six inches high and perfectly fruited are often met with.² It grows in almost every town in the county.

24. POLYPODIUM VULGARE L.

Common Polypody.

One of our most common ferns, found on rocks and in mossy woods. This fern has a great many curious forms and in the English fern books as many as twenty varieties are described, but as it is useless to undertake to book varieties which are likely to rise to the hundreds it is best to throw out all but those which are well established as being sufficiently different from the typical form and constantly remain so. Found everywhere.

25. PHEGopteris POLYPODIoidES Fée.

Beech Fern.

Grows in the Essex woods and I have found it in two places in Common lane, Beverly; it grows in Danvers (Miss Page). This is a White and Green Mountain fern and, with the next, is rare here. These two species of Phegopteris usually are found in about the same localities, growing together in Essex, and quite near each other in Beverly. This one almost runs into *P. hexagonoptera* which occurs about us, and which I hope may yet be found here.

26. PHEGopteris DRYopterIS Fée.

Oak Fern.

This as the last is a mountain fern and is found in localities with it. Both are European Ferns as well as American. Found in Essex, Beverly, Georgetown (Mrs. Horner).

27. OSMUNDA REGALIS L.

Royal Flowering Fern.

Common in almost all meadows. Sometimes six feet high. Called flowering fern on account of its having the upper pinnæ changed to a

² This comes nearer being a tree fern than any of our species, the caudex covered by the bases of the fronds of previous seasons, sometimes resting upon bare rocks for four or five inches without roots or fronds.

spike of fruit. Sometimes it will be found with fertile and sterile pinnules on the same little division of the frond.

28. *OSMUNDA CLAYTONIANA* L.

Interrupted Flowering Fern.

(So called as the fruit is found in the middle of the frond, with sterile pinnae above and below the fruited ones.) A sterile frond closely resembles that of the next, but is more delicate, broader towards the top, and the segments more rounded. Specimens are found fruited nearly all the way up from the base and one I believe clear to the top. Common; fine localities in North Andover, Topsfield and Salem.

29. *OSMUNDA CINNAMOMEA* L.

Cinnamon Fern.

(So called from its color when coming into fruit.) Familiar to all in pastures and by the roadside, throwing up its tall spikes of fruit in the centre of a whorl of sterile fronds. Often when in the shade I have found sterile fronds of this six feet long.

30. Var. *frondosa* is a state where a portion of the sterile frond becomes fertile, very curiously imitating the fertile fronds of No. 28. Found everywhere.

31. *LYGODIUM PALMATUM* Swartz.

Climbing Fern.

Found at Saugus. I have not searched for it myself, but add it on the authority of Mr. G. E. Emery, of Lynn, a specimen being in the Institute collection from him.³ All know this fern, and a description is unnecessary. Judging by the way it is sold in Boston one can hardly help thinking that if the practice of tearing it up so recklessly continues, it will soon be quite scarce, even at the Windsor and Concord localities.

32. *OPHIOGLOSSUM VULGATUM* L.

Adder's Tongue Fern.

I know of but one locality for this in the county, in Beverly, where it was first noticed by J. H. Emerton, 1872. No doubt others are to be found, as owing to its inconspicuous habits the fern is easily overlooked. Meadows and wet ground about the clumps of bushes and hummocks are the places to be searched for it.

³ The above locality is endorsed by Mr. C. M. Tracy.

33. BOTRYCHIUM TERNATUM Swartz.

Ternate Grape Fern.

The Botrychiums form one of the most interesting genera of ferns we here have represented. There are but ten recognized species of Botrychium known in the world, seven of which grow in America. Our two larger forms are very distinct, but the smaller ones seem to run into each other, though there are distinctions not at once noticeable to a casual observer. *B. ternatum* has two perfect fronds, one sterile and one fertile, distinct to the ground. The typical form is found in California growing to great size, while here the fertile frond seldom exceeds ten inches in height, with a sterile frond five inches across. Found at Essex, 1872-4.

34. Var. *lunarioides* has more rounded segments than the typical. The finest specimen I ever saw was found by Mrs. Horner, in Georgetown.

35. Var. *obliquum*. The segments are longer, and are quite oblique to the rachis.

36. Var. *dissectum*. The whole frond is cut and recut till almost entirely reduced to points. Nos. 34, 35, 36, are found both in wet shady places, and in pastures.

37. BOTRYCHIUM VIRGINIANUM Swartz.

Rattlesnake Fern.

Found in Beverly, and also in Georgetown (Mrs. Horner). This beautiful and delicate fern is the largest of all the Botrychiums and is found from Canada to the tropics. Not rare, yet (owing to its never spreading except by spores) it is seldom found abundant except as a number of specimens scattered through the woods. In this the fertile spike is on the same stalk with the sterile frond, all the limbs springing from a common centre much above the ground. There are one or two of the small species of Botrychium which possibly may be found in the county.

FERNS THAT POSSIBLY MAY YET BE FOUND GROWING
NATURALLY IN ESSEX COUNTY, MASS.

1. WOODWARDIA ANGUSTIFOLIA Smith. Now found in Hingham and Dedham.

2. PHEGopteris HEXAGONOPTERA Fée. Found in Portland, Brattleboro and South.

3. ASPIDIUM CRISTATUM var. CLINTONIANUM D. C. Eaton. Found in Vermont and New Hampshire.

4. *ASPIDIUM GOLDIANUM* Hook. Found in New Hampshire, Vermont and Connecticut.

5. *BOTRYCHIUM SIMPLEX* Hitch. Found on Long Island, Deerfield, Mass., etc.

6. *BOTRYCHIUM MATRICARIFOLIUM* A. Br. Found in New Hampshire, New York, Dedham, Mass.

7. *BOTRYCHIUM LANCEOLATUM* Angström. Found in Sudbury, Mass., etc.

LYCOPODS FOUND IN ESSEX COUNTY.

LYCOPODIUM LUCIDULUM Michx. Essex, Peabody, Georgetown.

L. INUNDATUM L. Beverly, Beaver pond; Chebacco pond.

L. ANNOTINUM L. Chebacco woods (1872, J. R.); probably the locality of this rare species was known to Wm. Oakes about 1840.

L. DENDROIDEUM Mx. also *var. OBSCURUM*. Common in almost every town.

L. CLAVATUM L. Common North Andover, Georgetown, Essex, Beverly, etc.

L. COMPLANATUM L. Very common, including a variety.

SELAGINELLA APUS Spring. West Boxford and Georgetown, abundant (Mrs. Horner).

S. RUPESTRIS Spring. Common on rocky, bare hills.

HYDROPTERIDES.

MARSILIA QUADRIFOLIA L. Has become fully established in a little pond by Leggs Hill, where it was planted years ago by Mr. Russell (S. B. Buttrick).

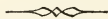
EQUISETACEÆ.

EQUISETUM ARVENSE L. Common everywhere.

E. SYLVATICUM L. Not rare in the woods.

E. LIMOSUM L. Wenham, Topsfield, etc.

E. HYEMALE L. Danvers (J. H. Sears.)



REGULAR MEETING, MONDAY, MARCH 1, 1875.

MEETING this evening at 7.30 o'clock. VICE PRESIDENT F. W. PUTNAM in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From Mary J. Safford Blake, Boston, Feb. 20; John M. Bradbury, Ipswich, Feb. 24; J. Colburn, Boston, Feb. 20; C. F. Crocker, Lawrence, Feb. 17; S. G. Drake, Boston, Feb. 25; S. A. Green, Boston, Feb. 27; Frederick A. Lucas, Rochester, N. Y., Feb. 28; Alfred Osgood, Newburyport, Feb. 24; Nathaniel Paine, Worcester, Feb. 19; A. A. Scott, Saugus, Feb. 18; Boston Public Library, Feb. 25; Buffalo Historical Society, Feb. 25; Portland Institute, Feb. 18; Worcester Lyceum and Natural History Association, Feb. 24.

The LIBRARIAN reported the following additions to the library :—

By Donation.

BOLLES, E. C. Sunday School Helper, 63 numbers. Christian Leader, 12 numbers. Sunday School Journal, 5 numbers. Sunday School Teacher, 3 numbers. Miscellaneous pamphlets, 27.

BROOKS, H. M. Woman's Journal, Apr., June, July, Aug., Oct., Nov., Dec., 1874.

CITY OF BOSTON. City Documents, 1874. 3 vols. 8vo.

CUTTER, A. E., of Charlestown, Mass. Ninth Annual Report of the Winchester Home Corporation for Aged Women, Jan., 1875. 8vo pamph.

FOOTE, H. W., of Boston, Mass. Sermon preached at King's Chapel, Sunday, Jan. 3, 1875. 8vo pamph.

GREEN, S. A., of Boston, Mass. Miscellaneous pamphlets, 70.

LEE, JOHN C. Commercial Bulletin, Feb. 13, 20, 27, 1875.

MASS. CHARITABLE MECHANIC ASSOCIATION. Twelfth Exhibition of the, Sept. Oct., 1874. 8vo pamph.

By Exchange.

AMERICAN PHILOSOPHICAL SOCIETY. Proceedings of. Vol. xiv. June-Dec. No. 93. 1874.

NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. Proceedings of the, Jan. 6, 1875. 8vo pamph.

WISCONSIN ACADEMY. Transactions of the. Vol. ii, 1873-4.

PUBLISHERS. Forest and Stream. Gloucester Telegraph. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Quaritch's Catalogue. Salem Post.

After remarks by the chair in relation to the very interesting photographs of ancient stone houses on the cliffs of the Mancos Valley, which had been taken by Messrs. Jackson and Ingersoll, of the Hayden Expedition, it was

Voted, To invite Mr. ERNEST INGERSOLL, of the Hayden Expedition, to give an illustrated lecture on the recent archæological discoveries of the expedition.

Mr. PUTNAM then called Dr. G. A. PERKINS to the chair, and occupied the evening by giving an account of the fortifications, and other enclosures, made by the Indians and the older races in North America. First, calling attention to the fortifications which, from historical evidence, were known to have been made and occupied by the different Indian tribes at the early period of the settlement of North America by the white race, he described their characteristic structure, which, generally, was that of low earth embankments, with, or without, an outside ditch, and these embankments were generally surmounted by palisades. In other instances the walls were of stone in the place of earth, and in many forts palisades were used without additional defence. He then described those which, for several reasons, were considered as having been erected by the mound builders. These were, so far as yet known, confined to the great Mississippi valley, the Ohio valley, and the southern and southwestern parts of the country. These structures are far more imposing than those made by the Indians, and are built with more regard to permanence. Many are so situated as to have formed almost impregnable positions, and we cannot but believe that their defenders must have maintained them for years, until finally they were forced, by continued battles and probably from lack of subsistence, to migrate farther to the southwest, or were so reduced by starvation as to become exterminated.

Many interesting comparisons were made between the fortifications in different parts of the country, and also those of South America, the Pacific Islands and the ancient parts of the old world, showing that in all lands, and during nearly all time, there had been a continued system of warfare and extermination of races.

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BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7.

SALEM, MASS., APRIL, 1875.

NO. 4.

One Dollar a Year in Advance. Ten Cents a Single Copy.

CATALOGUE OF THE FIRST ART EXHIBITION, MARCH, 1875.

<i>No.</i>		<i>Contributor.</i>	<i>Artist.</i>
1	Marriage of St. Catherine.*	Mary E. Williams.	Antonio Balestra.
2	View from Taormina in Sicily, looking towards Messina.*	"	A. O. Williams.
3	Copy of St. Margaret dispelling the Dragon with the Cross in the Church of San Pietro in Vincoli at Rome, by Guercino.*	"	Mary E. Williams.
4	Copy of the Madonna Enthroned, by Pinturicchio, at Perugia.*	"	Mary E. Williams.
5	Copy of the Marriage of St. Catherine by Murillo in the Vatican Gallery.*	"	Mary E. Williams.
6	View of Ischia from Capri.*	"	A. O. Williams.
7	Erithrean Sibyl.*	"	Mary E. Williams.
8	View on the Road to Vallombrosa.*	"	A. O. Williams.
9	Lake Como from San Giovanni.*	"	A. O. Williams.
10	Lake Maggiore from Baveno.*	"	A. O. Williams.
11	Lake Como from Bellagio.*	"	A. O. Williams.
12	Study of Capuchin Monks.*	"	Mary E. Williams.
13	Sans Souci.*	"	Mary E. Williams.
14	View of Sorrento and Bay of Naples.*	"	A. O. Williams.
15	Un Bajocco per Carità.*	"	Mary E. Williams.
16	A Roman Maiden.	"	Mary E. Williams.
17	Heidelberg Castle and Town.*	"	A. O. Williams.
18	Cloister Life in the Olden Time.*	"	Mary E. Williams.
19	The Roman Forum at Sunset; view from the Capitol.*	"	Moretti.
20	Copy of some Angels in the Coronation of the Virgin, by Raphael, in the Vatican.*	"	Mary E. Williams.
21	View of Mount Ætna from Taormina.*	"	A. O. Williams.
22	Roman Beggar.*	"	Mary E. Williams.
23	View of Tivoli and its Falls.*	"	A. O. Williams.
24	Study of an Arab, from life.*	"	Mary E. Williams.
25	Roman Peasant Girl.*	"	Mary E. Williams.

<i>No.</i>		<i>Contributor.</i>	<i>Artist.</i>
26	Tomb of Cecilia Metella and the Via Appia looking towards Rome.*	Mary E. Williams.	A. O. Williams.
27	Study of an Arab's Head, from life.*	"	Mary E. Williams.
28	Little Wild Flower.*	"	Mary E. Williams.
29	Bay of Salerno; view on the road to Amalfi.*	"	A. O. Williams.
30	Palermo.*	"	A. O. Williams.
31	American Autumn.*	"	A. O. Williams.
32	Old Joanna.*	"	Mary E. Williams.
33	The Alchemist.*	"	Mary E. Williams.
34	The Tenants of our Kitchen.*	"	Mary E. Williams.
35	Italian Kitchen.*	"	Mary E. Williams.
36	Angel of the Annunciation; copied from Pinturicchio.	"	Mary E. Williams.
37	Madonna; copied from Pinturicchio.	"	Mary E. Williams.]
38	Papyrus growing on the River Anapo in Sicily.*	"	A. O. Williams.
39	Saracenic Tombs at Taormina.	"	A. O. Williams.
40	Stella, Roman Costume.*	"	Mary E. Williams.
41	Roman Peasant.*	"	Mary E. Williams.
42	Pifferaro.*	"	Mary E. Williams.
43	Capuchin Monk.*	"	Mary E. Williams.
44	Star Grass.	"	Mary E. Williams.
45	Fringed Gentian.	"	Mary E. Williams.
46	Mallows.	"	Mary E. Williams.
47	Lady's Slipper.	"	Mary E. Williams.
48	Mountain Laurel.	"	Mary E. Williams.
49	Lysimachia and Lobelia.	"	Mary E. Williams.
50	Harebell.	"	Mary E. Williams.
51	Painted Cnp.	"	Mary E. Williams.
52	Cardinal Flower.	"	Mary E. Williams.
53	Closed Gentian.	"	Mary E. Williams.
54	Gay Feather and Burnett.	"	Mary E. Williams.
55	Nodding Lily.	"	Mary E. Williams.
56	Meadow Lily.	"	Mary E. Williams.
57	A Copy by Farrar, from a Water Color Sketch by Jno. W. Turner.*	G. L. Chandler.	
58	A view on the Androscoggin River in Bethel, Me., a sketch in oils by Butman.*	"	F. W. Butman.
59	Crayon drawing from a cast of an antique head.	"	G. L. Chandler.
60	Millbrook Falls—Thornton, N. H.—pencil sketch.	"	G. L. Chandler.
61	Water color drawing; Lake Winnipiesaukee.*	"	Wheelock.
62	Landscape.*	"	S. L. Gerry.
63	Landscape.*	"	W. A. Gay.
64	Photograph from a portrait.*	"	W. M. Hunt.
65	Etching, by Vandyke; portrait of Paul Pontius.	"	Vandyck.
66	Photograph from a portrait of the Duke d'Olivares.	"	Velasquez.
67	Paul preaching at Athens; engraving by Dorigny, after Raphael.	"	Raphael.
68	Landscape.*	"	R. H. Fuller.
69	The Transfiguration; engraved by Dorigny after Raphael.*	"	Raphael.
70	Landscape; engraved by Woollett, after Claude.*	"	Claude.
71	Engraving; "Comfort the Fatherless and the Widow," from a design by Flaxman.	"	Flaxman.
72	Landscape; Livermore Falls, Plymouth, N. H.*	"	G. L. Brown.
73	Landscape; Medford Salt Marshes.*	"	G. L. Brown.

<i>No.</i>		<i>Contributor.</i>	<i>Artist.</i>
74	Four photographs; Landscapes from Turner's Liber Studiorum.	G. L. Chandler.	Ira W. Turner.
75	Crevasse on the Mer de Glace; Chromo-lithograph.	"	G. L. Chandler.
76	Head of Daniel Webster; a photograph from a relieve in marble, life size.	"	
77	The Prophet Zachariah; carbon photograph, from the fresco by M. Angelo.	"	
78	Italian Shepherd.*	Mr. Newcomb.	George Newcomb.
79	View in Conway, N. H., near Artists' Mill.*	"	George Newcomb.
80	Kiarsarge Brook, Conway.*	"	George Newcomb.
81	Artists' Brook, Conway.*	"	George Newcomb.
82	Moonrise and Sunset, White Head Harbor, Portland.	E. S. Morse.	H. B. Brown.
83	Out-door Sketch, Campton, N. H.	"	H. B. Brown.
84	Palette Knife Sketch.	"	H. B. Brown.
85	American Bittern; Pastel from Still Life.	Mrs. Osgood.	Mrs. G. P. Osgood.
86	Woodcock from Still Life.	"	Mrs. G. P. Osgood.
87	Water Color, Autumn Leaf and Maiden-hair.		Miss L. H. Cleveland
88	Water Color, Autumn Leaves.		Miss L. H. Cleveland
89	Lake Lucerne.		Helen Philbrick.
90	Autumn Scene.		Helen Philbrick.
91	Water Color.		Eliza Philbrick.
92	Sketch in Oil.	Chas. T. Jenkins.	G. W. Alston Jenkins
93	Clytie, Charcoal.	Miss Callier.	Miss Ida Callier.
94	Copy from Photograph, Charcoal.	"	Miss Ida Callier.
95	Head — original.	"	Miss Ida Callier.
96	Child's Head, Charcoal.	"	Miss Ida Callier.
97	Eastern Beauty, Charcoal.	"	Miss Ida Callier.
98	Fruit Piece.	Mrs. Metcalf.	Mrs. E. S. Metcalf.
99	Lamb bound for Slaughter.	"	Mrs. E. S. Metcalf.
100	Italian Doves.	"	Mrs. E. S. Metcalf.
101	La Cucitrice.	"	Mrs. E. S. Metcalf.
102	Landscape.	Mrs. J. S. Cabot.	Gifford.
103	Portrait of Danish Prince, Copy.	"	Miss M. E. Williams
104	Grapes.	"	Mrs. R. H. Lathrop.
105	Table Top.	Mrs. Kemble.	Mrs. E. T. Kemble.
106	Table Top.	"	Mrs. E. T. Kemble.
107	Table Top.	"	Mrs. E. T. Kemble.
108	Tile.	"	Mrs. E. T. Kemble.
109	Tile.	"	Mrs. E. T. Kemble.
110	Derby Mansion.	E. S. Morse.	E. S. Morse.
111	The Lookout.	"	E. S. Morse.
112	Norman's Woe near Gloucester, Mass. Scene of the Wreck of the Hesperus.*	Mrs. Kindler.	Mrs. A. M. Kindler.
113	Study of Cattle.*	"	Mrs. A. M. Kindler.
114	Eastern Point.	"	Mrs. A. M. Kindler.
115	Marine View.*	"	Mrs. A. M. Kindler.
116	Full Military Record of Gen. U. S. Grant executed on the Principle of Reynold's Escutcheon of Military Service.	J. P. Reynolds.	R. L. Brown.
117	Military Record.	"	R. L. Brown.
118	Military Record.	"	R. L. Brown.
119	Shadow Dance.	Miss Callier.	Miss Ida Callier.
120	Terrier.	"	Miss Alice Callier.
121	Pen and Ink Composition.	George Flint.	George M. White.
122	Peace.	John Robinson.	
123	Pond Lilies.	"	Miss Mary A. Clark.
124	House Seven Gables.	"	George M. White.

No.		Contributor.	Artist.
125	Copy of Portrait of Raphael (purchased at Florence).	A. J. Archer.	
126	Castle of St. Angelo.	Elijah W. Upton.	Abel Nichols.
127	Fancy Head.	"	Joseph Ames.
128	Landscape, Head Waters of the Saco River.	"	Champney.
129	Off Cape Race.	W. D. Northend.	S. G. W. Benjamin.
130	Fairy Tales.	"	Miss H. F. Osborne.
131	Dominican Nun.	"	T. T. Spear.
132	Sherwood Oaks; English Water Color Chromo.	John Robinson.	
133	Bridge at Bassée.	N. Ropes.	Dufresne.
134	John Brown.	A. G. Browne.	T. S. Noble.
135	Crayon from Model.	Mr. Whitney.	Charles F. Whitney.
136	The Winnow.	Miss Johnson.	Miss Kate Johnson.
137	Fuchsia on Rice Paper.	Miss M. E. Briggs.	Miss Kate Johnson.
138	Painted Cup.	Miss Johnson.	Miss Kate Johnson.
139	Wistaria.	"	Miss Kate Johnson.
140	Sketch.	M. G. Wheatland.	Gay.
141	Water Color.	"	L. E. Merrill.
142	Water Color.	"	Rebecca Munroe.
143	View on the Hudson.	"	Miss Forrester.
144	Portland Harbor from Cushing's Island.	"	Miss E. Gardner.
145	Motto in Water Colors.	Mr. Dodge.	William B. Dodge.
146	Violets.	Miss Johnson.	Miss Kate Johnson.
147	Water Color.	Miss Quimby.	Miss A. M. Quimby.
148	Charcoal Sketch near Readville.	Miss Smith.	Miss S. E. Smith.
149	Copy from an Oil Painting.	"	Miss S. E. Smith.
150	The Monk, after Hunt.	"	Miss S. E. Smith.
151	Pine Grove, Blue Hill.	"	Miss S. E. Smith.
152	Copy of Head by Hunt.	"	Miss S. E. Smith.
153	Italian Boy.		Miss S. E. Smith.
154	Oak Bluff, Water Color.	Miss Kimball.	Miss S. S. Kimball.
155	Bird and Nest.	"	Miss S. S. Kimball.
156	Medallion; Europe; photograph.	Geo. R. Chapman.	
157	Medallion; Asia; photograph.	"	
158	Medallion; Africa; photograph.	"	
159	Medallion; America; photograph.	"	
160	Sunset.	E. S. Atwood.	Loemons.
161	The Mountain Brook.	"	
162	Cape Elizabeth.	Mrs. F. H. Lee.	Miss M. T. Hersey.
163	Lucrece.	O. P. Lord.	Goodman.
164	Artists' Reunion.	"	Hamman.
165	Socrates instructing Alcibiades.	"	Schopin.
166	Lily, charcoal copy.	Miss Peirson.	Pupil of S. E. Smith.
167	Hand from a cast.	"	S. E. Smith.
168	Grapes from cast.	Miss Osgood.	" Miss Williams.
169	Japan Lily, Charcoal.	Miss Smith.	Miss S. E. Smith.
170	Currants.	T. F. Hunt.	George M. White.
171	Autumn.	"	George M. White.
172	Early Morning at Sea.	"	S. G. W. Benjamin.
173	Path in the Woods.	"	J. J. Enneking.
174	Fruit.	"	Italian.
175	Gorge near Stowe, Vt.	"	George M. White.
176	Wild Cattle, Engraving.	W. D. Northend.	Landseer.
177	Panel; Apple Blossom.	Miss Caller.	Miss Alice Caller.
178	Panel; Lilac.	"	Miss A. Caller.
179	Panel; Wild Rose.	"	Miss A. Caller.
180	Panel; Violets.	"	Miss A. Caller.
181	Panel; Golden Rod.	"	Miss A. Caller.
182	Blue Gentian, Water Color.	Miss H. Putnam.	Miss H. G. Carlton.
183	Thistle Piece,* " "	Miss Grant.	Miss C. L. Grant.
184	Table Top. Pen and Ink.	Mrs. Davis.	Mrs. H. H. Davis.
185	Panel.	Mrs. G. Z. Silsbee.	Miss Silsbee.
186	Panel.	"	Miss Silsbee.

<i>No.</i>		<i>Contributor.</i>	<i>Artist.</i>
187	Nath'l Hawthorne at age of 36.	R. C. Manning.	Charles Osgood.
188	Portrait.	"	E. L. Custer.
189	Afternoon on L. Wallansee, Switzer'd.	"	E. L. Custer.
190	Cascade, Franconia.	"	S. P. Hodgdon.
191	Fruit.	"	
192	Study, Landscape.	"	E. L. Custer.
193	Horse, Pencil Drawing.		Benj. Henderson.
194	Portland Light.	E. C. Bolles.	H. B. Browne.
195	Flower Piece.		A. E. Whitmore.
196	Flower Piece.		A. E. Whitmore.
197	Sketch in Conway.	C. H. Weston.	George Newcomb.
198	A Study.	Miss K. Brooks.	Miss Kitty Brooks.
199	View in South Salem.	Miss K. Pierson.	Miss C. C. Lawrence.
200	Seven Pen Sketches.	Miss Saltonstall.	
201	Portrait, painted 1790.	Gardner Barton.	
202	Head of a Horse, after Landseer.	Mrs. Merritt.	Mrs. E. S. Merritt.
203	Roman Boy (copy after W. M. Hunt).	Miss Smith.	Miss S. E. Smith.
204	Italian Boy, a study from life.	"	Miss S. E. Smith.
205	Motto, Water Color.	"	Miss Dunning.
206	Baby (copy after W. M. Hunt).	"	Miss Smith.
207	Rainbow Creek, Florida (copy after Hunt).	"	Miss S. E. Smith.
208	Pansies.	"	Miss S. E. Smith.
209	Red Rose.		Miss S. E. Smith.
210	Flower Panel.		Miss S. E. Smith.
211	Flower Panel.		Miss S. E. Smith.
212	Flower Panel.		Miss S. E. Smith.
213	Flower Panel.		Miss S. E. Smith.
214	Fruit.		S. E. C. Oliver.
215	Ship Rock.	C. Cooke.	George M. White.
216	Study.	"	George M. White.
217	White Mountains.	J. A. Gillis.	Gerry.
218	Winter Landscape.	Miss H. H. Silsbee.	Miss E. Gardner.
219	Engraving, Sistine Madonna.	B. H. Silsbee.	
220	Engraving, The descent from the Cross.	"	
221	Engraving, St. Michael slaying the Dragon.	"	
222	Engraving, Christ bearing the Cross.	"	
223	Valley of the Pemigewasset.	"	S. L. Gerry.
224	Copy of Madonna by Murillo.	"	
225	Engraving, Marriage of St. Catherine.	"	
226	Ferns, etc.		Lucy E. Merrill.
227	Water Color, Cat o' Nine Tail.		Helen F. Ayres.
228	Pink Spiræa, Hardhack.		Helen F. Ayres.
229	Water Color, Flower piece.		Ellen Robbins.
230	Flower Piece.		Ellen Robbins.
231	Convolvulus.		Ellen Robbins.
232	Gladioli.		Ellen Robbins.
233	Winter Scene.		M. Macpherson.
234	Landscape.		M. Macpherson.
235	Loon.		M. Macpherson.
236	Echo Lake.		J. W. Averill.
237	Group of Cattle.		J. W. Averill.
238	Fruit Piece.	I. Fellows.	Miss S. E. Fellows.
239	Landscape.*	Miss Perkins.	Miss Annie Perkins.
240	Water Color.*	"	Miss Annie Perkins.
241	Water Color.	I. Fellows.	Miss S. E. Fellows.
242	Ezekiel.	Mrs. Nourse.	
243	Joel.	"	
244	Spanish Lady.	"	
245	Panel in Oil.	E. W. Upton.	Miss J. A. Stetson.
246	Shylock and Jessica.	"	Ames.
247	Feeding Chickens.		Miss H. F. Osborne.
248	Panel, Pansies.		Miss H. F. Osborne.

<i>No.</i>		<i>Contributor.</i>	<i>Artist.</i>
249	Poet's Dream.	C. A. Ropes.	Alex. Vion.
250	Canadian Winter.	"	Creighoff.
251	Kitchen and chicken.	"	Couterier.
252	Dessert.	"	X. L. Marsh.
253	The Dumb Donkey.	"	Lalaisse.
254	The First Ride.	"	Lalaisse.
255	Madonna.	"	Shraeder.
256	The Transfiguration.	"	S. B. Waugh.
257	Resignation.	"	Unknown.
258	Eastern Point.	"	Lane.
259	English Inn.	"	D. F. Notermay.
260	Barn Yard.	"	
261	Sir Galahad's Guest, from Tennyson's "Holy Grail."	Miss Osborne.	Miss H. F. Osborne.
262	Portrait of Daniel Webster, a relieve in marble.*	Mr. Chandler.	G. L. Chandler.
263	Portrait of Washington.	Mr. Southward.	George Southward.
264	Marine View.	"	George Southward.
265	George Washington.	E. W. Upton.	J. Ames.
266	Fruit Piece.	Miss Pratt.	Miss Pratt.
267	Fruit Piece.	"	Miss Pratt.
268	Rev. Dr. Cutler's Barn, Hamilton, Ms.	F. Lamson.	H. S. Fiske.
269	View Belknap, N. H.	"	H. S. Fiske.
270	Lamson's Bridge, Topsfield.	"	C. C. Marcy.
271	Cymbeline, Water Color.	W. H. Foster.	H. L. Burchmore.
272	Interior.	"	Unknown.
273	Interior.	"	Unknown.
274	Fruit Piece.	Miss Saltonstall.	John Sutton.
275	Lynnfield Pond.	"	R. D. Wilkie.
276	Copy and Design, Breast-plate and War Mantle. Minerva.	Miss Carlton.	Miss H. E. Carlton.
277	Flowers from Nature.	D. B. Hagar.	Miss H. E. Carlton.
278	Table Top, Roman Mosaic.	Mrs. J. O. Safford.	
279	Fancy Carved Ink Stand.	Willie Safford.	
280	Marine View.	Mrs. John N. Mott.	Dr. Ruggles.
281	Roses.	"	Miss Sindberg.
282	Venice, Moonlight.	"	
283	Venice, Moonlight.	"	
284	Water Fall.	Mrs. G. H. Wood.	Griggs.
285	Early Autumn.*	Mrs. Kindler.	Mrs. Kindler.
286	A Sibyl; copy from Guercino.	Mrs. J. H. Silsbee.	
287	Rabbits, copy.	Miss Grant.	Miss Lydia Grant.
288	Lion, copy, charcoal.	Miss Pickering.	Miss Pickering.
289	Azalia and Vase.	"	Miss Pickering.
290	Cupid from Cast, charcoal.	Miss Brown.	Miss Alice Brown.
291	Winter Scene, copy.	Miss Nichols.	C. F. A. Nichols.
292	Flowers, copy.	"	C. F. A. Nichols.
293	Spools, from object.	Miss Oliver.	Miss Lizzie Oliver.
294	Venetian Scene.	J. M. Caller.	Defaux.
295	Church and Piazza of St. Peter's at Rome.	Miss Williams.	Moretti.
296	View on the Tiber near Rome.	Geo. R. Emmerton.	J. M. Emmerton.
297	Monastery in Gottenberg.	J. M. Caller.	Defaux.
298	Artist's Brook, North Conway.	Daniel Low.	George Newcomb.
299	Panel.	Mrs. F. C. Butman.	Miss Butman.
300	Apple Blossom.	"	Miss Butman.
301	Original painting of Cleopatra, by Guido.	Miss E. Gardner.	Guido.
302	Terrier Study.	Miss Agge.	Miss A. Agge.
303	Abd El Kadir, from Bronze.	"	Miss Agge.
304	Contentment, water color.	Miss Brown.	C. P. Brown.
305	The Little Foxes.	W. D. Northend.	Carter.
306	Autumn Leaves.	Miss Allen.	Miss Allen.
307	Naugus Head.	Prof. A. S. Packard	Mrs. Hyatt.
308	Portraits.	J. Peirce.	Charles Osgood.
309	Water Color.		Miss A. M. Quimby.

No.		Contributor.	Artist.
310	Photograph of bust of Wendell Phillips.	A. G. Brown.	
311	Water color, Roses.		Pupil of S. E. Smith.
312	Painting, Rose.		Pupil of S. E. Smith.
313	Sepia Tree Study.		Pupil of S. E. Smith.
314	Head of an Armenian Priest.		Miss M. E. Williams.
315	Head of a Pilgrim.		Miss M. E. Williams.
316	Copy of picture in Boston Athenæum.		Miss M. E. Williams.
317	Picture wrought on silk with chenille and floss.		Miss M. E. Williams.
318	Glaze Portraits.	Mrs. F. C. Butman.	Lucy Ropes, 1819.
319	Albumen Portraits.		J.W. & J. S. Moulton.
320	Albumen Portraits.		J.W. & J. S. Moulton.
321	Spring Flowers.	Mrs. E. Putnam.	J.W. & J. S. Moulton.
322	Portrait.	Alfred Peabody.	Miss E. Gardner.
323	Portrait.	"	Mrs. Wayland Hoyt.
324	Intervale at North Conway.	Miss Gardner.	Miss E. Gardner.
325	Winter's Farewell. This is for sale for the benefit of the Salem Hospital.*		
326	Island of Pico.	"	Miss E. Gardner.
327	English Channel.	A. H. Johnson.	G. W. S. Benjamin.
328	Apple Blossoms.	"	G. W. S. Benjamin.
329	Roses.	J. M. Caller.	Miss Alice Caller.
330	Charcoal Sketches.	"	Miss Alice Caller.
331	Prayer in the Desert.	"	Miss Ida Caller.
332	Portrait, Cromwell.	C. A. Ropes.	Pupil of Vernet.
333	Landscape.	A. G. Brown.	
334	Flowers.	C. H. Higbee.	E. Burrill, jr.
335	Cattle.	Miss Gardner.	Mrs. Gardner.
336	Landscape.	W. P. Upham.	O. W. H. Upham.
337	Water Color.	Geo. Newcomb.	Geo. Newcomb.
338	Landscape.	Miss M. Allen.	Miss M. Allen.
339	Landscape.	H. Kilburn.	H. Kilburn.
340	M. Angelo; engraving.	"	H. Kilburn.
		C. H. Higbee.	

Pictures marked thus* were for sale. The exhibition was continued from Thursday, March 11, to Friday evening, March 19.

REGULAR MEETING, MONDAY, MARCH 22, 1875.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

Mr. J. H. STEVENS delivered an interesting lecture upon a subject with which he has become pretty thoroughly acquainted by long and patient study.

He commenced by stating that he should treat experimen-

tally the applications of galvanic electricity to a few of the arts of every day life. Electricity, he said, is one of the more newly developed of the wonderful and beautiful forces that nature offers with a lavish hand, and in this great awakening on scientific subjects, the efforts to invade the penetralia of her domain have been amply rewarded by the glorious revelations she has vouchsafed of the operations carried on in the mysterious depths of her aerial and subterranean laboratories.

Electricity, though long known, has always been, and is now, very imperfectly understood. It is true it can be liberated from its elemental prison house, measured and sent laden with intelligence to the uttermost parts of the earth in a moment of time, but should the question be raised, "What is electricity?" the lecturer said that he for one should have to say, he did not know. It is simply known that it is one of the most powerful of the natural forces, but the intensity which can carry it, upon a free conductor, entirely around the circumference of the earth four times in one second is utterly beyond comprehension.

It is customary to speak of it as a fluid, and talk of a current of electricity flowing through a wire. But that cannot be, for certainly a fluid and a solid cannot occupy the same space at the same time. However, that is a convenient way of speaking, and to call it a current also hides our ignorance on the subject. As one of the natural forces it is of very vital importance in every day life. It pervades all things. The air we breathe is vitalized by its presence. The food we eat is rendered palatable and nutritious by its power. It attends the rising and the setting of the sun, and the midday solar heat causes a surging of vast electric and magnetic forces, which exert a powerful influence in the great economy of nature.

The methods of developing electricity in considerable

quantities for practical use are abundant. As the time for experiments was necessarily short, the lecturer proceeded at once with them. He took, at first, one of the simplest methods of developing a galvanic current. He said this is done most effectually by subjecting to an acid solution two metals of an entirely opposite nature, one of which shall be most easily oxidized by the acid, and the other not oxidized at all. The easily oxidized or positive metal is commercial zinc; the other or negative metal is pure platinum, the most refractory and valuable of metals to the chemist and the electrician. If the two metals were alike, they would be acted upon equally, thus offering no inducement for a transfer of force from one to the other, and consequently no electrical action.

The lecturer then placed the metals in a glass of water, slightly acidulated with sulphuric acid. The zinc plate was amalgamated with mercury, so that no local action should take place until the condition required for a transfer of the tension or electro motive force from one plate to the other was fulfilled. That condition is to place a metallic connection from one plate to the other, outside of the solution, as a conductor for the current to travel upon. This was done with a piece of copper wire. The current then was flowing rapidly along the wire, from the platinum to the zinc plate. Through the solution it was flowing from the zinc to the platinum. The water was decomposing, the oxygen evolving at the zinc plate and the hydrogen at the platinum. The sulphur attacking the zinc was precipitated in the form of crystallized sulphate of zinc.

The wire conductor may be one inch long or one thousand miles long, and the electric force will be felt equally along its whole length, the strength of battery being equal to the resistance of the wire. Now to utilize this

current of electricity for a motive power, it must be converted into magnetism, which is easily done by wrapping insulated copper wire, in many turns, around soft iron of any convenient shape.

One of the many practical uses of the electric current he explained by the use of apparatus which was put up in a circuit about the hall. It represented a circuit of street gas-lights, such as have been in use in Ward Three in this city since last fall, and though the winter has been an unusually severe one, they have proved themselves equal to it, and have worked with perfect success through the severest storms. The apparatus consisted substantially of an electro magnet, an armature, ratchet wheel and pawl. Two wires led from the battery at the central station to the first light in the circuit, and thence to each one in its turn. When a current was sent out on the lighting wire, the magnet was charged, the armature of which actuates the pawl and ratchet wheel, thus opening the cock to let on the gas, at the same time, by an interruption of the current at the tip, lighting the gas. At the expiration of the half second of time which it takes to turn on and light the gas, the current was sent forward, by the action of a cam and spring, to the next light, and so on to the end of the circuit. A reversal of the switch at head quarters sent out a current on the other wire, which by a similar operation turned off the gas at the rate of four burners in one second.

After explaining the apparatus very fully and minutely, in its capacity as a burglar alarm, etc., the lecturer passed on to the consideration of some other branches of electrical science. The subject of ocean telegraphy was taken up and treated as fully as the time would permit, by the use of actual working apparatus and diagrams.

After speaking of the importance of international tele-

graphic communication, in a political and commercial light, the lecturer introduced some very delicate receiving apparatus, to show the great difference between ocean and land telegraphy. He explained that instead of the noise, glare of light, clicking and bustle of an ordinary telegraph office, the cable office was silent and dark, to enable the watchful operator to detect the slight deflection of the tiny pencil of light which was to impart to him the intelligence which had flashed along under a thousand watery leagues from a distant part of the world. After explaining the reversing key and the different methods of working cables, by reversal and change of potential, the lecturer explained by diagrams some of the methods of locating a fault or a break a hundred or a thousand miles away from the shore, down deep upon the bottom of the ocean; also how a steamer would go almost directly over the spot, find, take up and repair the fault. Several specimens of cables were exhibited.

A very sensitive tangent galvanometer with a small reflector within its coils was arranged to receive a small ray of light coming from a lamp, through a small hole in the side of a box. On the back of the reflector was fastened a very small magnetic needle, which was deflected to the right or left in obedience to the positive or negative current sent through the wire by the reversing key at the sending station. The ray of light from the darkened box falling upon the reflector through a convex lens, was reflected upon a screen at the top of the box.

A positive current through the galvanometer would throw the little spot of light to the right of zero on the screen. A negative current would throw it to the left, thus producing the combination, which to the practised eye formed the letters of the alphabet.

The lecturer then gave an illustration of the very delicate and difficult process of finding a break or fault in the

cable in mid-ocean. For instance, a very slight abrasion occurs in the insulation of the conductor at some point in the ocean. It is just sufficient to allow enough of the current to escape to prevent intelligent communication. The test is made by disconnecting both ends of the cable from all apparatus. A test battery and sensitive galvanometer are then applied to one end, and the resistance in OHMS of that portion is obtained, which is the resistance of the conductor to the fault, plus the resistance of the fault itself to the earth. Then the same process is repeated from the other end.

The resistance of the fault itself must be eliminated from both tests, and as it will be the same in both cases, the process will be as follows :

To the known resistance of the whole cable add the obtained resistance of one test, deduct from that the obtained resistance of the other test, divide that result by two and you have the resistance of the conductor in the first test from the office to the fault, in OHMS, which is easily reduced to miles and fractions of a mile.

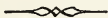
The chart then gives its locality in the ocean. A steamer then goes as near to the spot as possible and drags for the cable until it is fished up. By cutting the cable it is easily ascertained which side of the steamer the fault lies.

The cable is then picked up by machinery and passed along across the deck as the steamer proceeds. By passing it through a tank of water connected by very delicate test apparatus to the sea, the fault announces itself the moment it reaches the tank of water on deck. It is then cut out. Communication is established with both sides of the ocean, the cable is joined, the insulation is completed, and it is dropped down into its bed of infusoria, to throb again with those mysterious international impulses.

The finding of a break in the cable is similar in some respects, he said, to the process just described.

The lecturer then explained by diagrams the duplex or double transmission system, where two messages are sent at the same time in opposite directions upon the same wire without interference.

The lecture was closed by a series of brilliant experiments in electro-magnetism, the electric light, the deflagration of metals by the electric current, and the explosion of electric torpedoes.



REGULAR MEETING, MONDAY, APRIL 5, 1875.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From George H. Allen, Boston, March 2, 22; Samuel L. Boardman, Augusta, Me., March 17; John M. Bradbury, Ipswich, March 1; Waldo Higginson, Boston, March 2; Frank M. Caryl, Franklin, N. J., March 22; A. P. Mayer, Hoboken, N. J., March 1; George B. Gavett, Boston, March 10; Rufus King, New York, March 24; C. F. Maynard, Newtonville, March 5; Thomas E. Proctor, Boston, March 4; R. Ridgway, Washington, D. C., March 21, 29; Smith & Co., Woburn, April 1; Bristol Naturalist Society, Feb. 28; Liverpool Literary and Philosophical Society, Jan. ; Rhode Island Historical Society, March 9; Buffalo Historical Society, March 24; Iowa State Historical Society, March 30; Maryland Historical Society, March 26; New York Historical Society, March 26; Wein, K. Akademie der Wissenschaften, Mun 9, 16; Worcester, Public Library, March 24.

The LIBRARIAN reported the following additions to the library :—

By Donation.

KELLEY, JAMES H. Essex Register for 1828, 1829. 1 vol. folio.
 MACKENZIE, S. S., of Topsfield. Miscellaneous pamphlets, 15.
 MASS. HORTICULTURAL SOCIETY. Transactions of. 1874, pt ii.
 MERCANTILE LIBRARY ASSOCIATION OF SAN FRANCISCO. Twenty-Second Annual Report. 1874.

MERCANTILE LIBRARY COMPANY OF PHILA. Fifty-Second Annual Report. Jan., 1875.

OFFICE OF THE CHIEF OF ENGINEERS. Report in reference to the Canal to connect the Chesapeake and Ohio Canal with the City of Baltimore, by Col. J. J. Abert. 1838. 4to pamph. Preliminary Report upon Invertebrate Fossils collected by the Expeditions of 1871, 1872, 1873, by C. A. White. 8vo. 1874. Progress Report upon Geographical and Geological Explorations and Surveys west of the 100th meridian.

PERRY, W. S., of Geneva, N. Y. Miscellaneous pamphlets, 25.

PIPPEN, GEO. D. Josephus. 1 vol. 4to. Scientific American, 1862. 2 vols. folio. History of Provençan Poetry. 1 vol. 8vo. Life of A. Lincoln in German. 1 vol. 8vo. Mechanics' Magazine. 4 vols. 8vo. Harmer's Observations. 4 vols. 8vo. Lisle's Husbandry, 1757. 1 vol. 8vo. Greek and English Dictionary. 1 vol. 8vo. Kempton's History. 4 vols. 8vo. Antiquities of Rome. 1 vol. 8vo. The Modern Jesuits. 1 vol. 8vo. American Atlas. 1 vol. folio. Log Books, 4. Miscellaneous pamphlets, 150.

U. S. NAVAL OBSERVATORY. Washington Astronomical and Meteorological Observations, 1872. 1 vol. 4to.

U. S. PATENT OFFICE. Official Gazette, Jan. 26, Feb. 2, 9, March 9, 16, 1875.

WOODMAN, CYRUS, of Cambridge, Mass. Buxton Centennial, 1772-1872. By J. M. Marshall. 1 vol. 8vo.

By Exchange.

ST. LOUIS ACADEMY OF SCIENCE. Transactions. Vol. iii. No. ii. 8vo. 1875.

AMERICAN GEOGRAPHICAL SOCIETY. Journal. Vol. iv, 1872. 1 vol. 8vo.

BRISTOL NATURALIST SOCIETY. Proceedings of. Vol. i, pt. 1. New Series. 1874. 8vo.

GEOLOGICAL SURVEY OF CANADA. Report of Progress for 1873-4. 8vo.

N. E. HISTORIC-GENEALOGICAL SOCIETY. Register for April, 1875.

NEW YORK GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Genealogical and Biographical Record. April, 1875.

PEABODY INSTITUTE, Peabody, Mass. Twenty-Second Annual Report of the Trustees.

PHILA. ACADEMY OF NATURAL SCIENCES. Proceedings. Pt. iii, Oct., Nov., Dec., 1874.

PUBLISHERS. American Journal of Education. American Naturalist. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Observer. Salem Post.

Among the donations announced were a collection of glass ware made at the works of, and donated by, the Boston and Sandwich Glass Company, through Mr. John C. Lee, of Salem, illustrative of glass manufacture.

Horace Brown, Oliver D. Way and Daniel C. Manning, of Salem, and George W. Grader, of Marblehead, were elected resident members.

Rev. E. C. BOLLES presented to the Institute about seventy-five examples of East Indian and Japanese paper, the former obtained in London through the kindness of M. C. Cooke, Esq., and the latter derived from exchange with the Agricultural Department at Washington. After speaking of the ancient paper made by expanding sections of the cellular tissues of plants, as the papyrus of the Egyptians and the rice paper of the Chinese, Mr. Bolles called attention to the fact that the Japanese paper exhibited to the Institute was made from the bark of the Paper Mulberry (*Broussonetia papyrifera*), the same substance which, beaten out without pulping, forms the Tappa cloth of the Sandwich Islanders. One remarkable thing about the series of paper presented was its range of texture and weight; as the examples exhibited the most delicate and beautiful tracing paper, the coarsest "board," and most of the intermediate grades. Many specimens, especially those used for book-binding and box-covering, were profusely and artistically ornamented in color. A very fine and gauzy paper was shown as the goldsmiths' substitute for cotton. Perhaps the most curious was the vegetable leather, not to be distinguished in weight, color or flexibility from the best morocco for binders' use. A description of the manufacture of this may be found in the "Journal of the Franklin Institute" for January, 1875.

The East Indian paper was manufactured from a greater variety of substances. Some from Cashmere was from waste silk and examples from Berar from bamboo. A very delicate, highly colored and tough paper was the "kite paper" of Oude. Accompanying this series were the bark of *Broussonetia papyrifera* and *Daphne cannabina*, with the pulps made from both.

It is understood that these series are only in commence-

ment of a cabinet illustrating paper-making of all countries and ages, to which the Institute solicits contributions.

Mr. Bolles, when in England, procured a large number of specimens of vegetable fibres, which have been handsomely mounted, and will be properly arranged for exhibition, in the new department of Technology, which has been organized by the Institute, and which cannot fail to prove both interesting and instructive. He also obtained, through the courtesy of M. C. Cooke, Esq., a variety of models in clay, showing the different classes of workmen engaged in the various processes of paper manufacture as practised in India. Specimens of each were shown to the audience.

Mr. F. W. PUTNAM called attention to the fact that very similar materials (the inner bark of trees, leaves of rushes, etc.), described by Mr. Bolles as used by the ancient races of the East for the manufacture of paper, were also used by the prehistoric races of this country for the purpose of making garments, as proved by the specimens which he had exhibited at a former meeting.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., MAY, 1875. No. 5.

One Dollar a Year in Advance. Ten Cents a Single Copy.

SYNONYMY, DESCRIPTION, HISTORY, DISTRIBUTION AND HABITS OF THE PRAIRIE HARE (*LEPUS CAMPESTRIS*).

BY DR. ELLIOTT COUES, U. S. A.

Synonymy.

Lepus virginianus var.?, HARL., Fn. Amer. 1825, 310 (based entirely on the "Varying Hare of LEWIS and CLARK," *infra*; description from these authors).

Lepus virginianus ["HARL."], RICH., F. B. A. i, 1829, 224 (Saskatchewan; N. to 55°. Not of HARLAN, *op. cit.* 196, which is *L. americanus*).—MAXIM., Reise, i, 1839, 508.

Lepus campestris, BACH., J. A. N. S. P. vii, pt. ii, 1837, 349; viii, pt. i, 1839, 80 (in white pelage). WATERH., N. H. Mamm. ii, 1848, 127. GIEB., Säugeth. 1855, 449. BD., M. N. A. 1857, 585. NEWB., P. R. R. Rep. vi, 1857, 63 (upper California and Oregon). COOP. and SUCKL., N. H. W. T. 1860, pp. 104, 131 (Columbia to the Missouri). HAYD., Tr. Am. Phil. Soc. xii, 1862, 148 (upper Missouri). MAXIM., Arch. f. Naturg. xviii, 1862, ; Verz. N.-A. Säug. 1862, 193. ALLEN, Bull. Ess. Inst. vi, 1874, pp. 52, 58, 61, 66 (Kansas, Colorado, Wyoming and Utah). AMES, Bull. Minn. Acad. Nat. Sci. 1874, 70 (Minnesota).

Lepus townsendii, BACH., J. A. N. S. P. viii, pt. 1, 1839, 98, pl. 2 (Columbia R., in summer pelage). TOWNS., Narr. 1839, 325. AUD. and BACH., Q. N. A. i, 1849, 25, pl. 3. STEV., U. S. Geol. Surv. Terr. 1870, 462 (Wyoming).

Varying Hare, LEWIS and CLARK, ii, 179 (earliest identifiable account). HARL., *op. et l. c.* (Not of authors generally.)

Prairie Hare of the Fur Traders. RICH., *op. et l. c.*

Jackass Rabbit, VULG., in the regions it inhabits.

Description (from various specimens collected by the writer in July and August, in Montana, lat. 49°).

With the general form of the other large, long-limbed, great-eared hares of the west. Ears, measured from extreme base, decidedly longer than head from nose to occiput. Tail vertebræ about as long as ears from their extreme base — longer than height of ear above its notch. Hind foot rather longer than ears or tail, about twice as long as fore foot from the wrist. Tail with its hairs longer than ear or foot. Width of ear, pressed flat, about one-half its height. Soles and palms densely hairy throughout, the pads reaching to the ends of the nails. Whiskers as long as the head, some black, others white. A few black bristles over the eyes, the lower series constituting true eyelashes. Edges of the eyelids naked. Muzzle completely clothed. Ears softly and closely furry both sides, excepting the deeper portions of the concavity, and with a long thin hairy fringe on the anterior folded over edge. General pelage extremely long, loose and fluffy.

General color of the upper parts pale dull yellowish gray, greatly predominating over a dusky brown with which it is mingled. The bases of the hairs are plumbeous-white, to which succeeds a dusky interval, the yellowish gray furnishing the tip. This predominant tone is pretty uniform, but there is an obscurely darker median dorsal area; while back of the ears, on the sides, hips, buttocks, and in fact all around the general dorsal area, the color lightens, by extinction of the dusky, into a pale plumbeous gray, with a faint yellowish gray tinge. The throat band is of this latter character, and so are the outer surfaces of the limbs for some distance. Toward the extremities, however, the limbs become more decidedly yellowish brown, slightly toned with dusky. The feet-pads are dirty brown, as if soiled by continued contact with the ground. The under side of the head, and, indeed, all the under parts excepting the throat band, are pure cottony white. The tail is pure white, too — a strong character of the species — the dark dorsal area which obtains in its allies being wholly wanting, or merely indicated by a slight plumbeous line, prolonged part way down the top of the tail. The crown of the head agrees with the upper parts in general, but owing to the closeness of the fur, the pattern is finer, and the darker annulations of the hairs gives a heavy ground upon which the yellowish tips of the hairs are more sharply displayed. This darker coronal area is enclosed between light transocular stripes, not well defined, but still showing plainly by contrast. The eyelids themselves are white. The extreme muzzle and the cheeks for a short distance, are light buffy brown, or pale fawn color, well contrasted against the pure white of the chin.

The ears are strongly particolored. The back of the ear is snow-white to within about an inch of the tip, where it is abruptly black. The very edge of the posterior border of the ear is snow white at base, but generally tinged with tawny in the rest of its extent. The broadly folded over anterior border of the ear, and the furriest part of the inside of the ear opposite are like the crown of the head, but the pattern is still finer. The anterior edge of the ear gives a delicate fawn-colored stripe all the way along, supplemented by a pure white fringe of longer hairs. The tip of the ear in front is black like the back, but this black tipping is of less extent than it is behind. The shortest pilous hairs of the concavity of the ear are white, tending to pale fawn color towards the end of the ear. Sometimes that portion of the concavity of the ear which is not covered by the fold of the anterior border shows a quite blackish area, only less conspicuous than the black tip.

The sexes of this species are not distinguished by any constant color-marks, nor have I been able to satisfy myself that there are any other than the purely sexual external characters, though the male may average rather the larger, longer-limbed and greater-eared. Nor are the young, from the time they are a few weeks old, materially different from the adults. The very young rabbits, however, have distinguishing color-marks. The dark portions of the hairs are extensive and intense; while the fur is so remarkably long, loose and straggling that this dark color is more apparent than it is in the adults. There are also some curious special head markings. The most conspicuous of these is a small pure white spot, exactly on the middle of the crown; which is usually accompanied by a white eye stripe, a white patch in front of the eyes, and white on the side of the nose. These markings are diffuse and irregular, but still quite noticeable; and the coronal spot persists usually until the animal is well grown. The foot-pads are white or whitish until they become gradually discolored by contact with the ground. The incisors are white. On comparing very young animals with individuals of the same size of the cotton tail of the region (the latter must be a week or so older to attain corresponding dimensions) the differences are very obvious. The larger species already displays the longer limbed and seemingly "looser-jointed" characteristics of its kind, in comparison with the close-set, chubby form of the smaller rabbit; the fur is very notably longer, looser and fluffier, without the smoothness and gloss of that of the other species; while the coloration is entirely mixed blackish and yellowish gray, without any of the rich ruddy tints of the limbs, breast and nape, which appear from the first in the smaller species. The black tips of the ears and their fawn colored margins are also characteristic.

Winter pelage. White, more or less mixed with gray underneath, and with rusty markings, especially on the legs and ears. The species probably never becomes entirely pure white, like *L. glacialis*.

M E A S U R E M E N T S .

Cone's Number.	From tip of nose to				Tail to end of		Length of		Arm to end of claws.	Knee to end of claws.	Height of ear above notch.
	Eye.	Ear.	Occip.	Tail.	Verteb.	Hairs.	Fore ft.	Hind ft.			
4134 ¹	2.40	4.00	4.50	19.00	4.50	6.50	2.75	6.00	7.00	10.00	4.30
4200 ²	2.20	3.50	4.50	19.00	4.50	7.00	2.75	5.75	7.50	10.75	5.00
4269 ³	2.25	4.00	4.50	18.00	5.00	7.00	2.75	5.75	7.25	11.00	4.00

The written history of this species, though somewhat involved, may be fully elucidated. As in the cases of so many of our western animals, we owe our first recognizable account of this species to Lewis and Clark, whose description, though not entirely correct, is perfectly recognizable as belonging here. In 1825, Dr. Harlan copied their accounts in substance, querying the animal as a variety of his *L. virginianus* (the *L. americanus* of authors). In 1829, Sir John Richardson gave an accurate description, as far as his slight material went, supplemented with the account of Lewis and Clark, and from his whole article it is evident he had this species in view, although he miscalled it *L. virginianus*, supposing it to be the same as Harlan's animal, which it is not. The Prince Maximilian repeated Richardson's mistake of nomenclature; his account is otherwise accurate and unmistakable. In 1837, Dr. Bachman described it

¹ A fresh male specimen from near Milk River, July 5, 1874. Testes elongate, loosely pendulous, inguinal. Ear above occiput, 5.50. Eye grayish yellow. Humerus, 4.00. Femur, 5.00.

² A fresh female specimen from near Milk River, July 10, 1874. Ear above head, 6.00; width, pressed flat, 3.00.

³ A fresh female specimen from Three Buttes, Montana, Aug., 9, 1874. Ear above head, 5.00; width, 2.25.

in winter dress as *L. campestris*, the first tenable specific name. Shortly afterward, receiving it in summer dress, and being assured that it was not a "varying" hare, he redescribed it as *L. townsendii*. His subsequent suspicion, that his two names applied to the same animal in different vestures, as strongly expressed in the later work above quoted, has been amply verified. Since the rectified collation of synonymy by Prof. Baird in 1857, we find this well marked, abundant and widely distributed species noticed at greater or less length, and under its proper name, by nearly all the naturalists who have visited the northwestern or western territories, and reported the result of their observations. It may now be considered as a well known and thoroughly established species.

Its geographical distribution may be given with an undoubted close approximation to accuracy of detail. In British America, according to our chief if not only authority, Sir John Richardson, it has been traced north to 55°; "it is a common animal on the plains through which the north and south branches of the Saskatchewan flow, and which extend as far eastward as the Winepegoosis and southern extremity of Winepeg Lake." Along the northern border of the United States I have myself observed it from the beginning of the great plains just west of the Red River of the north, in eastern Dakota, to the base of the Rocky Mountains. It was most abundant in the region of the Upper Missouri and Milk River; but I have traced it in southeastern Dakota almost to the Iowa border. According to my observations it is the only jackass rabbit of Dakota and Montana. In Kansas, Mr. Allen states, "a few were seen in summer on the plains north of Fort Hays, and in winter from the western border of the state as far east as Bunker Hill Station." In this region they are associated with *L. callotis*. In Colo-

rado, the same author mentions that the species occurs in the parks, another species being there characteristic of the timbered mountainous region. Mr. Allen also found it "more or less common everywhere" in southwestern Wyoming, and extremely abundant in certain localities. To conclude with this gentleman's observations, he furthermore noted its common presence in the valley of the Salt Lake, Utah, where, as in Kansas, it is associated with *L. callotis*. So far as we have gone, we now see that the animal inhabits the prairie region of more than the northern half of the United States, from the eastern limit of the great plains westward. Our advices from west of the Rocky Mountains are equally explicit. Dr. Suckley reports it from the Blue Mountains of Oregon, and Mr. George Gibbs states that it is common on the plains of the Columbia east of the Cascades. In California, Dr. Newberry has indicated the limit of the range, at the point where the species is replaced by the ordinary "jack-ass" of that state, *L. californicus*. "The Prairie or Townsend's Hare is unknown in the valleys of California, though we found it a short distance south of the parallel of 42°, so that it may be said to inhabit that state. In the upper part of the Sacramento Valley, and even in the hills northeast of Fort Reading, we found the 'jackass rabbit' (*L. californicus*) everywhere abundant, the only hare, in the common acceptation of the term, known to exist there — *L. artemisiæ*, *audubonii* and *trowbridgii* being all called rabbits. Crossing the 'divide' between Lassen's butte, and coming down into the interior or Klamath basin, on the upper branches of Pitt River, we lost sight of the Californian species, to see no more of it till our return south months afterward. In its place another species * * * began to be occasionally seen, at first very rarely, afterwards oftener, as we approached the

Columbia, but never anywhere, in the region we visited, becoming so abundant as the Californian hare in some parts of its habitat. I saw the first individual of this species on the shores of Wright Lake." From this the limit of southward extension in California would seem to be more restricted than it is in the regions farther east. We have nothing to show that it occurs on the immediate Pacific slopes, and it probably does not. Nor did I ever ascertain its presence in New Mexico or Arizona, where *L. callotis* is found.

This, then, is the characteristic hare of the great plains—towards its southern limit associated with *L. callotis* and *L. californicus*, and on its mountainous confines meeting with the hare of the timber of those regions—but throughout vastly the greater portion of its range occupying the territory as the only representative of the several great hares of the west, all of which are known, wherever found, as "jackass rabbits," to distinguish them from the small species of the *L. sylvaticus* type. It is further notable as the only one of the very large long-limbed and great-eared group which, like *L. americanus*, regularly turns white in winter. The change probably occurs, in most cases, throughout the range of the species; in northern parts it appears to be universal; and, in fact, the only advices we have that it does not change are from Kansas, where, Mr. Allen states, that about half the specimens he secured in December and January retained their summer colors. There may, however, be some localities where the change is the exception rather than the rule. But even in the most northerly portions of its range, the change does not appear to be complete. There remains much bluish-gray about the roots of the hairs, and brown, rusty or yellowish tinges in places. The pale brown or fawn colored borders of the ears, and the similar colors

of the limbs towards their extremities, appear to be always retained. This is much as in *L. americanus*. The periods of the change are April and November.

In noting the habitat of the Prairie Hare, we must exclude from its range those portions which are wooded. Emphatically an animal of the plains, it never, so far as I have observed, enters timber, though ranging up to the very edge of the woods. Thus, we find it in the underbrush, sometimes quite heavy, of the river bottoms of the larger water courses in the west, but not in the woods that immediately fringe the rivers. It remains with us as we approach the timbered foot-hills of the Rocky Mountains, but we lose it in half a day's journey as we fairly enter the timber belt. It is as characteristic of the great sage barrens of the west as the sage cock itself; and in the more favored, grassy regions it is equally abundant. I have found it also in vast alkaline deserts I have traversed, and in those scarcely less forbidding tracts where a scanty herbage struggles with patches of prickly pear, mile after mile. In the more desolated regions, the only associate of its kind is the sage rabbit; near most of the water courses it will be found that the timber contains another ally, the common cottontail; but out on the broad rolling prairie, peculiarly its home, it flourishes almost alone.

Nor is the prairie hare in the least gregarious. I have never seen nor heard of several together, and indeed it is rare to find even two together, at any season whatever. It is one of the most solitary animals with which I have become acquainted. As we measure the weary miles of a day's march, a hare springs almost from beneath our feet, and another and another appears in succession, but always separated and independent of each other. I have never found any kind of locality even, which, presenting

special attractions, might invite many hares together. All places are alike to them; the oldest frontiersman, probably, could never guess with any degree of certainty where the next hare to bound off before him would appear. If it have any preference, however, it is for "weedy" tracts of which the sage brush regions furnish the best examples; there it finds shelter which the low, crisp, grass of rolling prairie does not afford, and also doubtless secures a greater variety of food. Like many other animals of the great plains, it appears independent of water; but we must judge this to be only an appearance.

In the regions where I have studied this hare, the female brings forth in June and early July—oftener the latter—and apparently only one litter is produced each season. The number of young is five or six, as a rule. The form is simply constructed, without burrowing, in the grass beneath some low, thick bush or tuft of weeds. The young are said to suckle and follow the mother for a month or more. They are agile little creatures, even when only a week or two old, and it is only when very young that they can be caught by hand. In travelling along the Milk River (where the species was abundant), early in July, I had several little ones brought to me, and some I kept for a time in a box. They had been stumbled upon as they dodged about in the grass, disturbed from their nest by the passage of our party. Though only five or six inches long, they had all the motions and attitudes characteristic of the parents, and made shift to run about quite cleverly. They could not eat, but some of them could be coaxed to lick a little milk. Their appearance, even at this early age, was unmistakable; the differences between them and young sage rabbits of the same size are elsewhere given. By the end of July we happened upon no prairie hares still so young as to be

taken in hand, though the third or half grown ones used often to stray about our camps, affording great amusement in the attempts instantly made by "all hands" to catch them.

I have not been eye-witness of the peculiar habits which doubtless mark the rutting period in this as in other species of the genus, having only been in the regions they inhabit later in the season. The period is over, I think, before June. Males taken during that month and the next are generally poor; the sexual organs are very apparent, as two long, linear masses in the inguinal region. After the care of the young, in July and August, the females are found much emaciated; and in fact, at no time during the summer, are these hares in good condition for the table. At other seasons the reverse may be considered the case by those who, unlike myself, are fond of rabbit-meat, the flesh, when in proper condition, being light colored, tender and not unpalatable. During the summer both sexes are terribly infested by a kind of tick, which fastens anywhere upon the body, but particularly about the ears, where I have found them almost in clusters. This tick appeared to me so different from any of those I had noticed on other rabbits, that I supposed it to be a new species, which I lately named *Ixodes leporis-campestris* ("Amer. Sportsm.," vol. iv, No. 22, Aug. 29, 1874). I regret that when I had the opportunity I did not make the necessary dissections, to see whether, like others of the genus, this species commonly harbors intestinal parasites. A tape-worm, *Tenia pectinata* Goeze (Diesing, Syst. Helminth. i, 498), is very frequent in *Lepus aquaticus*.

According to my experience, this hare is not much esteemed, either for its food or for its fur, by the whites of the region it inhabits, and it is accordingly not often an

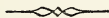
object of pursuit. I have not known it to be trapped; the few I have seen killed, besides those I secured myself, were shot wantonly, to test skill with the rifle, or decide a trivial wager. In the country of buffalo, elk and antelope, such small game is little heeded, and its pursuit made an object of ridicule. It is not so easy, however, to shoot the animal, except by skilful marksmanship with the rifle; so timorous is it, that when startled it rarely stops within range of a shot-gun; while its always unexpected appearance, and the great bounds it gives as it makes off, render it a difficult mark, notwithstanding its size. Mr. Townsend has described a mode of netting it in numbers, pursued by Indians. "Some one or two hundred Indians, men, women and children, collect, and enclose a large space with a slight net about five feet wide, made of hemp; the net is kept in a vertical position by pointed sticks attached to it and driven into the ground. These sticks are placed about five or six feet apart, and at each one an Indian is stationed, with a short club in his hand. After these arrangements are completed, a large number of Indians enter the circle and beat the bushes in every direction. The frightened hares dart off toward the net, and in attempting to pass are knocked on the head and secured. Mr. Pambrun, the superintendent of Fort Wallawalla, from whom I obtained this account, says that he has often participated in this sport with the Indians, and has known several hundred to be thus taken in a day. When captured alive they do not scream like the common gray rabbit (*L. sylvaticus*)."

The extraordinary agility of this animal, which would be inferred from inspection of its lithe yet muscular and free-limbed shape, has always attracted attention. Lewis and Clark speak of its leaping eighteen to twenty-one

feet, and doubtless this is no exaggeration. Yet this is a matter shared by the allied species, and I do not think that the present surpasses *L. callotis* for example, in this respect. The two animals have always seemed to me alike in their powers of running and leaping. It is difficult to give one who has not seen the animals alive an idea of their singular appearance when at full speed, and the ground they get over in a few seconds is the more remarkable, considering the force they waste in unnecessary height of the leaps. The first sign one has usually of a hare which has squatted low in hopes of concealment, till its fears force it to fly, is a great bound into the air, with lengthened body and erect ears. The instant it touches the ground, it is up again, with a peculiar springy jerk, more like the rebounding of an elastic ball than the result of muscular exertion. It does not come fairly down, and gather itself for the next spring, but seems to hold its legs stiffly extended, to touch only its toes, and rebound by the force of its impact. The action is strikingly suggestive of the "bucking" of a mule, an affair with which people in the west are only too familiar. With a succession of these high jerky leaps the animal makes off generally in a straight course; there is nothing of the dodging and scuttling about that marks the running of the smaller rabbits. As it gains on its pursuers, and its fears subside, the springs grow weaker, just as a flat stone "skipped" on the water diminishes in length of the rebounds, and finally the animal squats in its tracks on its haunches with a jerk, to look and listen. If perfectly reassured, it may then lope on with easy steps, till it is out of sight, or it may squat low and disappear by folding back its ears behind some bunch of weeds. The ears, by the way, are curiously the most conspicuous part of the whole animal; few hares are seen, I fancy, as long as they keep those great

organs folded flat. But more than likely, on its first halt, the hare's natural timidity will not permit it either to squat to steal quietly away. On the contrary it sits erect on its haunches, intent to discover new alarm. The attitude at such times is highly characteristic. One fore foot is advanced a little before the other, and the ears are held pointing in opposite directions. A hare in such an attitude as this is always upon the watch, and the slightest stimulation of its fears at such time is enough to start it on its bounding course. It is a beautiful exhibition of timid watchfulness.

I have never seen this hare stand erect with its fore paws off the ground, as some of its smaller relatives are wont to do, and I doubt that it ever assumes this attitude except perhaps momentarily. The position above described, and the ordinary squatting in its form, are the only motionless attitudes I have observed. On the few occasions when I have seen it feeding quietly, unsuspicious of danger, it moved about with alternate lengthening and doubling of the body, like that of the common rabbit under similar circumstances.



REGULAR MEETING, MONDAY, APRIL 19, 1875.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair.

W. P. UPHAM was elected secretary, *pro tem*. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From N. J. Bartlett, Boston, Apr. 9; W. H. Whitmore, Boston, Apr. 9, 17; Dr. J. Plason, Wien, Nov. 20, 1874; Daniel A. Rogers, Chicago, Ill., Apr. 9; Brunn,

Naturforschende Verein, Nov., 1874; Minnesota Historical Society, Apr. 3, 9; New Bedford Free Public Library, Apr. 2; Quebec Literary and Historical Society, Apr. 9; Smithsonian Institution, Dec. 30, 1874, Apr. 3; Vermont State Library, Apr. 10; Yale College, Corporation of, April 14.

The LIBRARIAN reported the following additions to the library :—

By Donation.

COLE, C. J. Registers and Programmes of the State Normal School in Salem, from 1856-1875. 73 pamphlets.

HUNTINGTON, A. L. Miscellaneous pamphlets, 6 vols. 8vo. Collection of the American Statistical Association, Vol. i, 1 vol. 8vo. Water Power of Maine. 1 vol. 8vo. Patent Office Reports, 1851, 1855, 1857, 1858, 1859. 5 vols. 8vo. Agriculture of Mass., by C. L. Flint. 3 vols. 8vo. Debates in Mass. Convention, 1853. 3 vols. 8vo. Message and Documents, 1852-3. 2 vols. 8vo. 1855-6. 1 vol. 8vo. History of the Reed Family. 1 vol. 8vo. Commerce and Navigation, 1850. 1 vol. 8vo. History of Lowell. 1 vol. 8vo. Græca Minora. 1 vol. 8vo.

KIMBALL, JAMES. Cape Ann Advertiser, Dec. 18, 1874, Feb. 12, 19, 26, March 5, 12, 19, 26, Apr. 2, 1875.

MERRITT, L. F. Essex County Mercury, Mch. 31, Apr. 7, 14, 1875. Salem City Documents, 1874. 1 vol. 8vo.

TWINING, T., of Twickenham, England. Technical Training, by donor. 1 vol. 8vo. London, 1874.

U. S. BOARD OF EDUCATION. Report of the Commissioner, 1873. 1 vol. 8vo.

U. S. PATENT OFFICE. Official Gazette for March, 1875.

By Exchange.

AMERICAN ANTIQUARIAN SOCIETY. Proceedings of the, No. 63, 1874. 8vo.

CANADIAN INSTITUTE. Canadian Journal, Vol. xiv, No. iv, March, 1875. 8vo.

GESELLSCHAFT NATURFORSCHENDER FREUNDE, BERLIN. Sitzungs-berichte, Jahrg, 1874. 1 vol. 8vo.

NATURFORSCHENDER VEREIN, BRÜNN, AUSTRIA. Verhandlungen, Bd., xii, Heft I, II, 1873. 8vo.

NATURHISTORISCHE VEREIN DER PREUSSISCHEN RHEINLANDE, UND WESTPHALENS, Bonn. Verhandlungen, Jahrg, xxx, III Folge, x Bd. 1873. Jahrg xxxi, iv Folge, I Bd., 1874. 8vo.

NATURWISSENSCHAFTLICHE GESELLSCHAFT "ISIS" IN DRESDEN. Sitzungs-berichte, jahrg, 1874. Apr.-Sept. 8vo.

VEREIN DER FREUNDE DER NATURGESCHICHTE IN MEKLENBURG NEUBRANDENBURG. Archiv xxviii, Jahrg, 1874. 1 vol. 8vo.

VERMONT HISTORICAL SOCIETY. Registration Reports, 1871, 1872. 2 vols. 8vo. Vermont Legislative Documents, Vols. 1, 2, 4, 1874. 3 vols. 8vo. Laws of Vermont, 1874. 1 vol. 8vo. Vermont Legislative Directory, 1874-5. 1 vol. 12mo. Records of the Governor and Council of the State of Vermont. Vol. II, 1779-1782. 1 vol. 8vo. Transaction of the Vermont Dairyman's Association, 1873-4. 8vo. pamph.

PUBLISHERS. Forest and Stream. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Observer. Salem Post.

Arthur L. Huntington, of Salem, was elected a resident member.

Voted, That a committee be appointed to prepare a list of officers for the year ensuing, and to report a printed ballot at the annual meeting, May 12.

The chair appointed Messrs. James Kimball, E. C. Bolles, and W. Neilson.



REGULAR MEETING, MONDAY, MAY 3, 1875.

MEETING this evening at 7.30 o'clock. PRESIDENT in the chair. W. P. UPHAM was appointed secretary *pro tem*. Records read.

Arthur W. Foote, Albert H. Smith and John Mangan, all of Salem, were duly elected resident members.

Adjourned.



ANNUAL MEETING, WEDNESDAY, MAY 12, 1875.

ANNUAL meeting this day at 3 P. M. The PRESIDENT in the chair. GEORGE M. WHIPPLE was appointed secretary *pro tem*. Records read.

The SECRETARY announced the following correspondence:—

From C. A. Cutter, Boston, Apr. 29; J. C. Holmes, Detroit, Mich., April 22; B. Quaritch, London, April 22; J. L. Sibley, Cambridge, April 11; W. W. Weildon, Concord, May 1; Bergen, The Museum, Jan. 11; Berlin, Die Gesellschaft Naturforschender Freunde, Feb. 10; Buffalo Historical Society, May 7; Minnesota Historical Society, April 20, May 6; Nassauischen Vereins für Naturkunde, Sept. 1; New England Historic Genealogical Society, May 5; Worcester Lyceum and Natural History Association, May 6.

The LIBRARIAN reported the following additions to the library :—

By Donation.

ABBOTT, A. A. Salem Gazette, Jan. 28, 1794 to Nov. 3, 1795, Jan. 3, 1797–Dec. 29, 1797. Essex Register, Jan. 11, 1809 (No. 3).

BOLLES, E. C. Ladies' Repository. 2 vols. 8vo. Paley's Theology. 1 vol. 8vo. Titles of Jesus. 1 vol. 8vo. Ballou's Select Sermons. 1 vol. 8vo. Course of Time, by Pollock. 1 vol. 8vo. Lacon. 1 vol. 8vo. Layman's Legacy. 1 vol. 8vo. Practical Hints to Universalists. 1 vol. 8vo. Chris and Otho. 1 vol. 8vo. Pepy's Diary. 3 vols. 8vo. Louis xiv and Court of France. 1 vol. 8vo. Lectures on Domestic Duties. 1 vol. 12mo. Universalist Magazine, 1821. 1 vol. folio. The Holy Eucharist. 1 vol. 8vo. Bards of the Bible. 1 vol. 8vo. The Old and New. 1 vol. 8vo. Life and Character of A. Lincoln. 1 vol. 8vo. Ancient History by C. Rollins. 8 vols. 12mo. History of Universalism. 1 vol. 12mo. Notes on the Parables. 1 vol. 12mo. History of the Churches of New York. 1 vol. 12mo. Doddridge on Religion. 1 vol. 12mo. Ballou Review. 1 vol. 12mo. Universalist Hymn Book. 2 vol. 12mo. The Prophecies of Daniel. 1 vol. 12mo. Winchester Dialogues. 1 vol. 12mo. Jordan's Review. 1 vol. 12mo. Review on Hall. 1 vol. 12mo. Law of Kindness. 1 vol. 12mo. Rayner's Lectures. 1 vol. 12mo. Pingree's Debate. 1 vol. 12mo. History of the Waldenses. 1 vol. 12mo.

COLBY UNIVERSITY. Charter of, with Acts and Resolves. 1875. 8vo.

GOODELL, A. C. Address before the Essex Institute, Oct. 5, 1874, at the Centennial Anniversary of the Meeting of the Provincial Assembly in Salem, Oct. 5, 1774. 1 vol. 8vo.

HUNT, T. F. Designs for Parsonage Houses, etc. 1 vol. 4to.

LEE, JOHN C. Commercial Bulletin, Apr. 24, May 1, 1875.

MASSACHUSETTS HORTICULTURAL SOCIETY. Transactions of, Year 1874. Pt. II.

PACKARD, A. S., Jr. Boston Directory, 1847–8. 1 vol. 8vo.

PERKINS, GEO. A. Robinson Crusoe, by D. Defoe. 1 vol. 8vo. Siege of Corinth. 1 vol. 18mo. Evelina, by Miss Burney. 1 vol. 18mo. Life of John Wieliff and others, by W. Gilpin. 1 vol. 12mo. Life of T. Scott. 1 vol. 12mo. Bacon's Novum Organum Scientiarum. 1 vol. 12mo. Grey's Hudibras. 2 vols. 8vo. Moore's Zeluco. 2 vols. 8vo. Modern Pilgrims, by Wood. 2 vols. 8vo. Spirit of Missions. 20 numbers. Miscellaneous pamphlets, 120.

U. S. PATENT OFFICE. Official Gazette, Apr. 6, 13, 1875.

WHIPPLE, GEO. M. Mass. Special Laws, Vols. 9, 10, 1849–59. 2 vols.

By Exchange.

ARCHIV FÜR ANTHROPOLOGIE. Band vii, Heft. II, 1875.

BOSTON PUBLIC LIBRARY. Bulletin for April, 1875.

BOWDOIN COLLEGE. Seventy-third Annual Catalogue of. 1874–5. 8vo pamph. KÖNIGLICHE BAYERISCHE BOTANISCHE GESELLSCHAFT REGENSBURG. Flora, 1874. 1 vol. 8vo.

LITERARY AND PHILOSOPHICAL SOCIETY OF LIVERPOOL. Proceedings of the. Vol. xxviii, 1873–4.

NEW JERSEY HISTORICAL SOCIETY. Proceedings of the. Vol. iv, 2d Series, No. I, 1875. 8vo.

PUBLISHERS. American Journal of Science. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Observer. Salem Post. The Western. Turner's Public Spirit.

[To be continued.]

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7.

SALEM, MASS., JUNE, 1875.

No. 6.

One Dollar a Year in Advance. Ten Cents a Single Copy.

ANNUAL MEETING, WEDNESDAY, MAY 12, 1875.

[*Continued.*]

The annual reports of the officers and curators were read and accepted, and from them the accompanying

RETROSPECT OF THE YEAR

has been compiled, presenting in a concise form the work of the Institute, in its various departments, since the last annual meeting.

MEMBERS.—Changes occur in the list of our associates by the addition of new names, and the withdrawal of some by resignation, removal from the county or vicinity, and by death. In this connection notices of five of the resident and two of the corresponding members, who have deceased during the year, are inserted.

Joseph Sebastian Cabot, died at his residence in Salem, on Monday afternoon, June 29, 1874. He belonged to a

family which has been prominent for a century and three-quarters in the annals of Salem. He was born in Salem October 8, 1796, and was the son of Joseph and Esther Orne (Paine) Cabot, grandson of Joseph and Rebecca (Orne) Cabot, great-grandson of Joseph and Elizabeth (Higginson) Cabot, great-great-grandson of John and Anna (Orne) Cabot. The last named ancestor, John Cabot, came to Salem about the year 1702, from the Isle of Jersey. After graduating from Harvard College, in the class of 1815, he studied law for a while in the office of Hon. Leverett Saltonstall, but did not pursue the study long. In 1829 he became President of the Asiatic Bank, and so continued until his death, with brief intervals while he was Bank Commissioner and during two visits to Europe. Mr. Cabot took a deep interest in the organization of the Harmony Grove Cemetery Corporation in 1840, and was a Trustee and President until his decease. He was also long a President of the Salem Savings Bank, and for many years on one of its most important committees. For several years he was President of the Massachusetts Horticultural Society, and was noted for his enlightened interest in, and taste for, horticultural and kindred pursuits. In 1843 and 1844 he served as an Alderman of the city, and in 1845-6-7 and 8, he was the Mayor of Salem, performing the duties with great efficiency and success. Mr. Cabot was twice married; first, August 2, 1843, to Martha Laurens Stearns, of Worcester, who died April 21, 1844; and secondly, March 3, 1852, to Susan Burley Howes (daughter of the late Frederick Howes, Esq.), who survives him. The deceased was a very companionable and courteous gentleman, and his financial skill was constantly at the service of his fellow citizens.

Edward Brooks Peirson, M. D., one of our most

skilful surgeons and physicians, died suddenly at his residence on Wednesday evening, November 18, 1874. He was a son of the late Dr. A. L. Peirson, likewise an eminent surgeon and physician, who lost his life by the Norwalk calamity in 1853; and was born Jan. 22, 1820, in this city. He received his early education in the Salem schools, was a graduate of Harvard in the class of 1840, studied his profession with his father and at the Harvard Medical School, and soon entered upon a very large and successful practice, particularly in surgery. For several years he was President of the Essex South District Medical Society, and was an earnest and active coöperator in all our useful local institutions for the benefit of the unfortunate. During the war he went to the southern battle fields to attend a wounded brother, and there acquired the seeds of a malarial disease from which he was never wholly freed. His sudden death will leave a lamentable void in this community. Dr. Peirson was twice married; first, to Catharine Pickman, daughter of Nath'l and Caroline (Sanders) Saltonstall (born May 18, 1823, died June 25, 1852); secondly, to Ellen, daughter of Justus and Hannah (Wood) Perry, of Keene, N. H.

Daniel Hopkins Mansfield, one of our old and efficient shipmasters, died on Thursday evening, December 24, 1874, in his 74th year. He was for several years previous to 1859, United States Consul at Zanzibar, and in 1863, 1864, and 1865, was an Alderman of this city. He joined the Salem Marine Society in 1849, and was its treasurer from 1860. He was for a quarter of a century or more a member of the First Baptist Church, and was a gentleman of simple habits and great integrity of character. He was son of Daniel Hopkins and Marcia (Tucker) Mansfield, and was born at Salem, January 14, 1801.

William Archer. On New Year's morn we were pained to hear the sudden decease of an associate which occurred during the evening previous (Dec. 31, 1874), having attended to his usual business that afternoon. He was a son of William and Elizabeth (Daniels) Archer, and was born at Salem July 27, 1816. After leaving the High School he served an apprenticeship with the late Edmund Currier, as a jeweller and silversmith, and subsequently established himself in that business, which he continued for several years in Beverly, Gloucester and Salem. In the spring of 1852 he became associated with the late Israel D. Shepard, as an auctioneer, and continued in that occupation till his death, having built up a large business as an auctioneer and real estate and insurance agent. He was industrious, prompt, energetic and faithful, to the interests confided to him. He was twice married; first, to Mary O., daughter of John H. and Lucy (Trafton) Glover; she died 9th September, 1860, aged 44 years. Secondly, June 19, 1862, to Mary J. Brown, of Charlestown.

John Barlow, one of our esteemed citizens, died on Monday afternoon, January 11th, 1875. He was the son of Henry and Catherine (Armstrong) Barlow, and was born in Shercock, Cavan County, Ireland, 10th July, 1813. He came to Salem July 3, 1823, where he has since resided. He engaged in the boot and shoe business, in which he was successful, and from which he retired several years since. He was an intelligent, thoughtful, active and useful citizen; and from his early manhood, had been associated with the military, the masonic and other bodies. He was an Alderman of the city in 1864 and 1865, and a Representative in the General Court in 1869 and 1870. He married Emeline C. Becket, daughter of Jonathan and Jane (Hyland) Campbell Becket.

Jeffries Wyman, M. D., Professor of Anatomy in Harvard College, died from a sudden hemorrhage, at Bethlehem, N. H., Sept. 4, 1874, where he had gone to escape the autumnal catarrh. He was the son of Dr. Rufus and Ann (Morrill) Wyman, and was born at Chelmsford, Mass., Aug. 11, 1814, graduated at Harvard in 1833, and soon after commenced the study of medicine. In 1843 he accepted the chair of anatomy and physiology in the Hampden-Sydney College, in Virginia. In 1847 he was appointed to succeed Dr. Warren as the Hersey Professor of Anatomy in Harvard. From 1856 to 1870 he was President of the Boston Society of Natural History. On the foundation of the Museum of American Ethnology and Archæology at Cambridge, he was named one of the seven trustees, and was at once requested by his fellow members of the board to take charge of the museum as its curator. The seven annual reports on the condition and accessions to the new museum are evidences of what he did in that direction. He also communicated to the Natural History Society, the American Academy of Arts and Sciences, and to various scientific journals, over one hundred important papers, the results of anatomical and anthropological studies. He married in December, 1850, Adeline Wheelwright, who died in June, 1855, leaving two daughters. He married secondly, in August, 1861, Anna Williams Whitney, who died February, 1864, leaving one son.

Nathaniel Bradstreet Shurtleff, M. D., died in Boston (Dorchester District), October, 17, 1874. He was born in Boston June 20, 1810, and was the son of Dr. Benjamin Shurtleff, a veteran practitioner of eminence. After his graduation at Cambridge in 1831, he commenced the study of medicine, taking his degree in 1834. In early life he was interested in anatomical studies, but latterly

his taste lay in other directions, especially in early New England history. His numerous antiquarian and historical works will cause him to be long remembered. He was for many years one of the trustees of the Boston Public Library, a member of the School Committee, and for three years Mayor of the city. He was also member of the Board of Overseers of Harvard College, and for a long period the Secretary. A ceaseless activity characterized his whole life, and no man was more familiarly known, or had connected himself with so many associations, either of a permanent or temporary purpose. In July, 1836, he was married to Sarah Eliza, daughter of Hiram Smith, of Boston.

MEETINGS.—During the summer and early autumn five *Field Meetings* have been held. The first at Ipswich, on Wednesday, June 3, 1874. At the afternoon session, in the First Church, Prof. E. S. Morse, of Salem, spoke on "the fertilization of flowers;" Mr. F. W. Putnam gave an account of the shell heaps at the Light House and at Eagle Hill; Rev. T. Morong an historical notice of the Public Library the gift of Augustine Heard, Esq. *Second*, at Topsfield, Thursday, June 18, 1874. The afternoon session, in the Methodist Church, was attended by a goodly number of the citizens. Rev. James H. Fitts of Topsfield communicated a paper on "Robert B. Thomas, the maker of the Farmer's Almanac;" Vice-president F. W. Putnam gave an account of the fishes taken from Ipswich River; Charles J. Peabody gave a brief history of Topsfield; Dr. Jeremiah Spofford of Groveland, B. P. Adams of Topsfield, Richard Phillips, Samuel Todd and Charles H. Holmes, offered remarks. *Third*, at *West Newbury*, Thursday, July 18, 1874. At the session, in the Second Church, George D. Phippen of Salem, spoke on the flowers

that had been collected, and also on the unwelcome class found in our gardens, known as weeds; Mr. John Robinson spoke of the ferns; Messrs. D. B. Hagar of the State Normal School in Salem, Abner G. Phipps, agent of the State Board of Education, J. Spofford of Groveland, Haydn Brown of West Newbury, Stephen M. Allen of Boston, and W. H. H. Marsh of Salem, were among the speakers. *Fourth*, at Rockport, Thursday August 6, 1874. Afternoon session in the Town Hall, Alfred Osgood of Newburyport, F. W. Putnam of Salem, A. W. Dodge of Hamilton, Albert H. Tuttle of the Ohio Agricultural and Mechanical College, Columbus, Rev. A. B. Hervey of Troy, N. Y., James Kimball of Salem, and others, addressed the meeting. *Fifth*, at Manchester, Friday October 2, 1874, by invitation of Mr. Lewis Tappan and other citizens of that town; the afternoon session at the Town Hall; among the speakers were F. W. Putnam, E. S. Morse, John Robinson and Rev. E. C. Bolles, all of Salem.

Evening Meetings have been held at the rooms, usually on the first and third Monday evenings of each month. At these meetings an increasing interest was manifested, and several valuable communications were presented, abstracts of which have been printed in the BULLETIN, or reserved for the HISTORICAL COLLECTIONS. The following may be specified: "A talk upon Art," by Charles C. Perkins, of Boston; "Observations among the various Scientific Collections of London," by E. C. Bolles; "A List of Birds observed at various localities contiguous to the Central Pacific Railroad, from Sacramento City, Cal., to Salt Lake City, Utah," by Robert Ridgway; "Fishes and Crayfishes from Mammoth Cave," by F. W. Putnam; "An account of the process in the manufacture of glass,"

by John Robinson; "On the Theory of Evolution," by E. S. Morse; "An account of the Archæological Discoveries of the Hayden Expedition," by F. W. Putnam; "Archæological Researches in Kentucky," by F. W. Putnam; "Comb Manufacturing," by Haydn Brown; "On the System of Visible Speech," by A. Graham Bell; "Ferns of Essex County," by John Robinson; "On the Fortifications and other enclosures made by the Indians and the older races in North America," by F. W. Putnam; "Synonymy, description, history, distribution, and habits of the Prairie Hare" (*Lepus campestris*), by Elliott Coues; "The applications of Galvanic Electricity to a few of the arts of every day life," by J. H. Stevens; "On East Indian and Japanese Paper," by E. C. Bolles. At the meeting on the 16th of November, 1874, a full account was given of the examination of an Indian burial place in Marblehead, and the finding of several skeletons *in situ* by A. C. Goodell, Jr., W. P. Upham, E. S. Atwood, C. Cooke, E. S. Morse, A. H. Johnson and E. C. Bolles, who were present at the examination and excavation. The centennial anniversary of the meeting of the Provincial Congress at Salem, was duly observed at the Rooms of the Institute, October 5, 1874, by an address from Vice-president A. C. Goodell, Jr., and a social gathering.

LECTURES AND CONCERTS. — An interesting series of eight lectures, concerts and entertainments were given in Mechanic Hall. 1st, Monday, Nov. 9, James Steele Mackaye, upon the "Philosophy of Dramatic Expression; 2d, Monday, Nov. 23, concert by the Boston Swedish singers; 3d, Saturday, Dec. 5, concert by Theodore Thomas, with his full orchestra of sixty performers; 4th, Monday, Dec. 14, Charles C. Perkins of Boston, on

"Art," illustrated by the calcium light; 5th, Monday, Jan. 11, Rev. E. C. Bolles of Salem, "Rambles in Europe," illustrated; 6th, Monday, Jan. 25, Daniel Dougherty, Esq., of Philadelphia, on "Oratory"; 7th, Monday, Feb. 8, Rev. E. C. Bolles of Salem, "Rambles in Europe," illustrated by means of the lantern; 8th, Monday, March 15, Prof. A. M. Mayer, of Stevens' Institute, "Sound and how we hear," illustrated by fine lantern pictures.

Also a *supplementary course*, which comprised a concert by the Schumann Club of Boston, under the direction of Mr. Carlyle Petersilea, on Monday, May 3d; Select Readings by Prof. J. M. Churchill, of Andover; and a Lecture by Rev. E. C. Bolles, of Salem, subject "Rambles Abroad," are announced to be given soon.

In addition to the above, James Steele Mackaye, delivered a lecture, at the Rooms in Plummer Hall, Tuesday, Nov. 24, on "The Life, Labors, and Peculiar Discoveries of Francois Delsarte," and on Thursday, March 25, Mr. E. Ingersoll, a lecture on "The Ancient Inhabitants, or Cliff Dwellers of the Canons of the Colorado Valley."

HORTICULTURAL. — The operations of this department have been successfully conducted during the past season. Five exhibitions have been held, two devoted to the show of special flowers, the others more general in their character. 1st, on Saturday evening, June 27; a beautiful display; *Cereus nycticollis* (variety of Night Blooming Cereus) a native of Mexico; *Phyllocactus crenatus*, and several other species of cacti; *Cypripedium spectabile*, etc. 2d, Tuesday and Wednesday, June 30 and July 1, the rose show. 3d, Tuesday, July 21, special; *Clerodendron Balfourii*; *Alamanda Scottii*, etc. 4th, Wednesday, July 29. 5th, the Annual, from Tuesday, Sept.

15, to Friday, Sept. 18, maintained the usual character for a display of many choice and beautiful flowers and fine fruit, vegetables, etc., though the decorations were not so elaborate as in some previous seasons. The following prizes and gratuities were awarded:—*Flowers*. Cut flowers; 1st, Charles A. Putnam, 2d, John Robinson, 3d, C. A. Beckford. Pot Plants; 1st, David M. Balch, 2d, John Robinson. Stand of growing plants; 1st, John Robinson. Arranged Basket of Cut Flowers; 1st, C. H. Buxton. Collection of Gladioli; 1st, Charles A. Putnam. Parlor Bouquet; 1st, Mrs. Arthur Kemble. Wardian Case; 1st, John Robinson. Ferneries, circular; 1st, John Robinson. *Fruit*.—Collection of Pears; 1st, Wm. Maloon, 2d, Joseph A. Goldthwaite. Best single dish of Bartletts; T. Putnam Symonds. Best single dish of Seckel; T. Putnam Symonds. Best single dish of Duchess de Angouleme; Charles A. Ropes. Best single dish of Louise Bonne; R. G. Goss. Collection of Apples; 1st, C. A. Ropes, 2d, H. F. Skerry. Best single dish of Apples; Henry Very. Collection of Peaches; 1st, George Bowker, 2d, Charles M. Richardson. Best single dish of Peaches; F. Lamson. Best single dish of Rogers No. 4 and 15; H. F. Skerry. Best Hartford Prolific; T. Putnam Symonds. Best Creveling; George Russell. *Vegetables*.—Best peck of Early Rose Potatoes; E. C. Larrabee. Best four Marrow Squashes; Plummer Farm School. Best four heads of Cauliflowers; E. C. Larrabee. Best five heads of Cabbages; Plummer Farm School. Best dish of Trophy Tomato; W. F. Gardner. Best dish of other varieties of Tomato; E. C. Larrabee. Best five Beets; Plummer Farm School. Best peck of Onions; Plummer Farm School. Largest and best-shaped Squash; Plummer Farm School. Very large and fine Sweet Corn; S. D. Tilton.

ART EXHIBITION. — At the quarterly meeting in February, it was mentioned that the Misses Mary E. and Abby O. Williams of Salem, would be willing to deposit in the Rooms of the Institute, temporarily, their valuable collection of Paintings, many of which were copied by them from the "old masters," during a residence of several years in Rome. After some conversation, the subject was referred to the Curators of the department of Art, to make the necessary arrangements, and to tender to the ladies the sincere thanks of the Institute for this liberal proposal. The collection was received on Thursday, March 4, and it was deemed expedient, with so fine a basis, to have an Art Exhibition, and to solicit contributions to this end, though not without some slight misgivings of its success, and thus fulfilling a long cherished desire of those connected with the Institute.

The Exhibition was opened Thursday, March 11, and continued to Friday evening, March 19. The result was a surprise to all parties interested. From the first day that notice was given, pictures of all kinds were sent in with the greatest liberality, until some three or four hundred had been collected and hung upon the walls of the exhibition room. They comprised oil paintings, water colors, charcoal sketches, pen and ink drawings, and engravings; among them were works of decided merit. The sides of the hall were almost entirely covered with cloth of a maroon color, against which the pictures were suspended. The alcoves, which seemed at first to present some difficulties, were fitted up with frames, arranged so as to produce indentations or recesses in the sides of the hall, and gave an extremely pleasing effect. All four sides of the room were completely covered with pictures; a long array of gas burners fitted with reflectors, threw down upon them a brilliant light, so that the

entire effect of the scene was very cheerful, pleasant and enlivening.

The whole number of pictures registered was three hundred and forty; a Catalogue of which was printed in the April number of the BULLETIN for the present year.

LIBRARY. — The additions by donations and exchange during the year are as follows: —

Donations.

Folios,	31	Pamphlets and Serials, . . .	5,603
Quartos,	37	Almanacs,	77
Octavos,	457		—
Duodecimos,	168	Total,	5,680
Sexdecimos,	36	Total of bound volumes, . .	729
	—		—
Total,	729	Total of Donations,	6,409

Exchanges.

Quartos,	1	Pamphlets and Serials, . . .	835
Octavos,	141	Total of bound volumes, . .	145
Duodecimos,	3		—
	—	Total of Exchanges,	980
Total,	145	Total of Donations,	6,409
			—
		Total,	7,389

Of the total number of pamphlets and serials, 3,143 were pamphlets, and 3,295 serials.

The donations to the Library for the year have been received from one hundred and three individuals and fifteen societies and departments of the General and State Governments. The exchanges from seventy-five societies and incorporate institutions, of which forty-six are foreign; also from editors and publishers.

From the editors of the "American Naturalist" forty-five serial publications.

MUSEUM. — Many valuable specimens in natural history have been given during the year, and are on deposit with the Trustees of the Peabody Academy of Science, in accordance with previous arrangements. These have been reported at our meetings, and have been duly acknowledged to the several donors. In addition to the above, several interesting specimens of an historical character have been deposited in the Rooms of the Institute, and contribute very much of interest and value to the antiquarian and historical portion of the Museum. A Committee appointed for the purpose have rearranged the collection of relics, and local antiquities in the eastern ante-room, and by the efforts of Rev. E. C. Bolles and others, several series of specimens in Technology have been added.

PUBLICATIONS. — The BULLETIN has been continued in monthly numbers, giving full reports of the doings of the Institute, and abstracts of papers read at the meetings. The HISTORICAL COLLECTIONS, Vol. xii, Nos. 3 and 4, and Vol. xiii, No. 1, have been printed.

FINANCIAL. — The Treasurer's Report shows the following receipts and expenditures during the year. Additional means are requisite to perform, in a suitable manner, the various duties which the members may reasonably expect.

DEBITS.

General Account.

Athenæum, Rent, etc., \$350.00; Salaries, \$745.00; Coal, \$160.50, . . .	\$1,255.50
Lectures, \$116.55; Express, \$43.32; Postage, \$10.50, . . .	170.37
Insurance, \$50.00; Rosetta Stone, \$16.00; Gas, \$68.35, . . .	134.35
Photographs, \$35.84; Publications, \$1,129.37, . . .	1,165.21
Collecting, \$5.00; Sundries, \$23.38, . . .	28.38

Historical.

Binding, \$95.00; Books, \$10.00, . . .	105.00
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Natural History and Horticulture.

Horticultural Exhibitions, \$90.43; Sundries, \$5.89, . . .	96.32
	<hr/>
	\$2,955.13

CREDITS.

General Account.

Dividends Webster Bank,	30.00
Assessments, \$1,278.00; Publications, \$483.05,	1,761.05
Life Membership, \$30.00; Sundries, \$134.63,	164.63
Athenæum, proportion of coal and janitor,	155.25
Cash at beginning of year,	182.68
Balance due Treasurer,	89.58

Historical.

Dividends Naumkeag Bank,	22.00
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Natural History and Horticulture.

Dividends P. S. & P. R. R., \$20.00; Lowell Bleachery, \$64.00, . . .	84.00
Horticultural Exhibitions,	85.94

Davis Fund.

Coupons Burlington and Missouri R. R.,	240.00
Coupons Dixon, Peoria and Hannibal R. R.,	140.00

\$2,955.13

The receipts and expenditures on account of the recent courses of lectures and entertainments, and the Art Exhibition in March, which were severally placed in charge of the curators of the department of the Arts, are not included in the above statement; the supplementary course not having been concluded. The same will be carried to the next year's account.

Mr. W. P. UPHAM read a new draft of the Constitution and By-laws, as prepared by the special Committee appointed at the meeting held on the 16th of November last. After discussion the further consideration was deferred to the next quarterly meeting on the second Wednesday of August.

The following Officers were then elected, until others shall be chosen in their stead :—

President.

HENRY WHEATLAND.

Vice Presidents.

Of History—A. C. GOODELL, JR. *Of Natural History*—F. W. PUTNAM.
Of Horticulture—WILLIAM SUTTON. *Of the Arts*—D. B. HAGAR.

Recording and Home Secretary.

GEO. M. WHIPPLE.

Foreign Secretary.

A. S. PACKARD, JR.

Treasurer.

HENRY WHEATLAND.

Librarian.

WILLIAM P. UPHAM.

Superintendent of the Museum.

T. F. HUNT.

Curators of Historical Department.

W. P. Upham, M. A. Stickney, James Kimball.

Curators of Natural History Department.

H. F. King, G. A. Perkins, William Neilson.

Curators of Horticultural Department.

T. F. HUNT, D. M. Balch, W. P. Andrews.

Curators of Department of the Arts.

C. H. Higbee, James A. Gillis, George M. Whipple.

Finance Committee.

John C. Lee, Jas. Upton, Geo. D. Phippen, Jas. O. Safford.

Lecture Committee.

D. B. Hagar, George Perkins, William Northey, C. H. Higbee,
 E. C. Bolles, A. H. Johnson.

Field Meeting Committee.

A. W. Dodge, E. N. Walton, N. A. Horton, Alfred Osgood.

Library Committee.

J. G. Waters, E. B. Willson, Geo. F. Flint.

Publication Committee.

A. C. Goodell, Jr., F. W. Putnam, R. S. Rantoul,
 Henry M. Brooks, E. S. Atwood.

On motion of Mr. C. H. HIGBEE it was

Voted, That the thanks of the Essex Institute be tendered to the officers and members of the Schumann Club, of Boston, for their valuable services gratuitously rendered, at the concert given on the evening of May 3d, in the Supplementary Series of Lectures and Entertainments.

James Silver Williams and Henry F. Perkins, both of Salem, were elected resident members.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7.

SALEM, MASS., JULY, 1875.

No. 7.

One Dollar a Year in Advance. Ten Cents a Single Copy.

FIELD MEETING AT HAMILTON, THURSDAY, JUNE 3, 1875.

THE first field meeting of the season was held at the Chebacco House, in Hamilton, this day. There is much that is enjoyable about the woods and ponds in the vicinity of the hotel, and the place is thereby very popular as an objective point for parties during the summer months. It is also a favorite resort for the zoologists and the botanists, as the finding of many of our animals and plants, some of exceeding interest, are frequent rewards of a half day's tramp. The members of the Institute are, therefore, always pleased in the selection of this place for one of their field days.

The Proprietors of the House, the Messrs. Whipple, are always courteous and very assiduous in their efforts to promote the objects of these meetings, and to contribute to the comfort of the members and friends in attendance.

The forenoon was devoted to the usual rambles in search of objects of interest, as the inclination of each dictated, and many fine specimens were found. At one o'clock lunch was partaken in the woods near the house.

At 2.30 P. M. the afternoon session was held in the Hall of the Chebacco House. The PRESIDENT in the chair.

The records of preceding meeting were read.

Vice President F. W. PUTNAM gave an interesting account of his late visit to Newburyport for the purpose of examining some curious groups of stones recently found by W. C. Johnson, Esq., of that city, while prospecting on his land, about four miles from the city, near Parker River. These stones were in a few instances of such singular arrangement as to lead to the supposition that they possibly indicated something of archaeological importance.

Mr. Putnam mentioned that besides a row of piles of stones, each about eight feet in diameter, there was found a few hundred feet distant a singular arrangement of small stones, in the form of the letter E, the length of the letter being six feet, and the width about two feet. Near this was a small circle of stones about four feet in diameter, with a number of stones inside the circle. Near this was a slight earth mound. In the immediate vicinity were a number of small heaps of shells. These were the surface indications; and while there was undoubted evidence of the stones having been placed in these positions a long while ago, so that the soil and sod had nearly covered them, still there was nothing that indicated a great antiquity.

Excavations were begun in the expectation of finding that the stones had been placed as marks of sepulture, but nothing except a small piece of Indian pottery was

brought to light. Finally the small earth mound was opened, and the clay, burnt to some depth, showed that a fire had been kept there for a long time. Pieces of the old-fashioned square brick, fragments of green window glass and lead sash, such as were imported by the first settlers, were also found, showing that part, at least, of the mound had been caused by some of the early settlers, though there is no tradition of the land in question ever having been settled upon or cleared for cultivation.

Thus, after a most careful consideration, the singular arrangement of the stones remains a mystery. That any white person should take the trouble to arrange the stones, as found, seems improbable, while the absence of signs of burial under them, would indicate that if made by the Indians, they were for the purpose of simply marking the spot for some particular reason. Stone piles of various shapes have been found in different parts of the country, evidently the work of the Indians, and it may be that these at Newburyport, which was a well known resort of the Indians, were also their work, though nothing definite could be obtained as to their origin. Photographs of these heaps were exhibited.

Mr. ALFRED OSGOOD of Newburyport, said that the early white settlers sometimes used stones to mark their fishing grounds, and suggested that these heaps might be for that purpose.

Mr. PUTNAM wished publicly to thank Mr. Johnson for his thoughtfulness in calling attention to these curious piles of stones, as often very valuable relics are found by a little care and research, from indications far less promising in appearance than those in question, though often, as in the present case, an examination may prove them to be unimportant.

Mr. OSGOOD gave an informal talk on the present aspect of the mining lands and the presence of minerals in the vicinity of Newburyport, and expressed himself rather skeptical as to the richness and value of any of the deposits yet found. Without doubt valuable ore is there, though whether it would pay to work the mines, expecting a large yield, is questionable. He thought that no new discoveries had been made favorable to such an opinion.

Mr. J. H. STEVENS of Salem, being called upon, said that the Institute was doing much to develop among the people, and particularly the young people, a knowledge of natural history. He then gave an interesting account of the growth of the cane brakes (*Arundinaria macrosperma*) in the Southern States. Hundreds of miles of country along the Mississippi bottoms are covered by these brakes, some growing to the height of twenty-five or thirty feet. When young and tender the leaves furnish food for deer and other animals. He had often wandered, rifle in hand, through that country, and felt the want of the kind of knowledge that the Essex Institute and these field meetings were disseminating in order to appreciate the opportunities for the study of nature there presented.

He also spoke of the American Tulip Tree (*Liriodendron tulipifera*), which grows luxuriantly in the same vicinity, and when in bloom presents the appearance, as seen from the high bluffs, of an immense flower garden extending sometimes for miles.

Mr. PUTNAM said that in the Mammoth and several other caves in Kentucky there were often found pieces of canes, with one end burned, and it was supposed that they had been filled with grease and used as torches by some of the Indian race, who, to a certain extent, used the caves for various purposes.

Miss L. H. UPTON of Salem presented the following list of plants found in bloom during the excursion :

LIST OF PLANTS FOUND IN FLOWER AT ESSEX,
JUNE 3, 1875.

- Anemone nemorosa* L. Wind-flower.
Ranunculus abortivus L. Small-flowered crowfoot.
Ranunculus acris L. Buttercups.
Coptis trifolia Salisb. Gold-thread.
Aquilegia Canadensis L. Columbine.
Sarracenia purpurea L. Pitcher-plant.
Viola lanceolata L. Lance-leaved white violet.
Viola blanda Willd. Sweet white violet.
Viola cucullata Ait. Blue violet.
Prunus Pennsylvanica L. Wild red cherry.
Potentilla Canadensis L. Cinque-foil.
Fragaria Virginiana Ehr. Wild strawberry.
Amelanchier Canadensis Torr. & Gray. June-berry.
Aralia nudicaulis L. Wild sarsaparilla.
Cornus Canadensis L. Dwarf cornel. Bunch-berry.
Oldenlandia cœrulea. Houstonia.
Antennaria plantaginifolia Hook. Mouse-ear.
Taraxacum dens-leonis Desf. Dandelion.
Vaccinium Pennsylvanicum Lam. Dwarf blueberry.
Vaccinium corymbosum L. High blueberry.
Trientalis Americana Pursh. Star-flower.
Veronica serpyllifolia L. Thyme-leaved speedwell.
Rumex acetosella L. Sheep sorrel.
Arisæma triphyllum Torr. Indian turnip. Jack in the pulpit.
Cōrallorhiza innata R. Brown. Coral-root.
Cypripedium acaule Ait. Lady's slipper.
Sisyrinchium Bermudianum L. Blue-eyed grass.
Polygonatum biflorum Ell. Smaller Solomon's seal.
Smilacina racemosa Desf. False spikenard.
Smilacina bifolia Ker. Wild lily of the valley.
Medeola Virginica L. Indian cucumber root.

After remarks from Dr. J. P. Fessenden, Rev. S. C. Beane and Messrs. E. N. Walton and N. A. Horton of Salem, and the adoption of a vote of thanks to the Messrs. Whipple of the Chebacco House, for their kindness in placing at the disposal of the Institute their house and grounds for the day, the meeting adjourned.

REGULAR MEETING, MONDAY, JUNE 21, 1875.

Regular meeting this evening at the rooms. The PRESIDENT in the chair. Records read.

The PRESIDENT read extracts from the will of the late Abby W. Ditmore of Salem bequeathing to the Institute certain sums, subject to conditions which were stated. As the full amount of the bequests was not to be paid at present, the matter was laid over for action at a future meeting.

The PRESIDENT stated that a collection of documents, papers, prints, etc., relating to the various centennial celebrations of this period had been commenced, and requested contributions from members and friends to this object.

Mr. CHARLES H. HIGBEE stated that he had received some very fine and valuable specimens of algæ from Mrs. A. L. Davis, Mrs. H. A. Cochran and Mrs. Bray of Gloucester, also from N. S. B. Herbert of Lynn, and that these specimens would be placed in the Institute collection. He desired thus publicly to thank these persons for their kindness and attention.

J. H. Stevens, Philip H. Kimball and Miss Mary E. Kinsman of Salem, and H. M. Cross of Newburyport, were duly elected resident members.

The PRESIDENT alluded to the decease of one of our associates, CHARLES WENTWORTH UPHAM, which took place on Tuesday morning, June 15, 1875, and gave a brief account of his connection with the Society and of his strong interest in its objects. He spoke also of his

early life and of his various literary labors, and of his interest in the establishment of the State Normal School in Salem.

Gen. HENRY K. OLIVER of Salem made some very appropriate remarks on the death of Mr. Upham, and in conclusion offered the following resolutions for the consideration of the meeting.

Whereas, it has pleased the Supreme Ruler of events to remove by death our honored and venerated associate and fellow citizen, CHARLES WENTWORTH UPHAM, long connected with the Essex Institute, and for half a century identified with this community in many relations :

Resolved, That the members of the Institute, deeply feeling the irreparable loss it has sustained, enroll his name with unfeigned grief among the most eminent of its past associates.

Resolved, That while we mourn the loss of so valued a member of our society, and so justly esteemed a citizen, our sorrow is tempered as we look back upon a life, so true to all the purposes of life, and read the record of the varied virtues and singular excellencies, which characterized the whole career of our departed associate.

Resolved, That in his career as a faithful and earnest minister of the Gospel, in his zealous labors as a citizen for the best interests of our community, as a patriotic officer in state and nation, as a successful laborer in the fields of literature, biography and history, he has for himself fully won the highest reputation, and conferred increased distinction upon our ancient municipality.

Resolved, That as we review the long and inspiring catalogue of the great and good men, who from its earliest days have adorned and illustrated our historic city, our just pride receives a new impulse, in adding to the honored roll the name of one so fully entitled to receive reverent admiration and honor, among the most highly honored and revered.

Rev. E. C. BOLLES moved the adoption of these resolutions, and paid an eloquent tribute to the character and memory of Mr. Upham.

Rev. E. S. ATWOOD heartily endorsed the resolutions offered by Gen. Oliver. He spoke of his long and valued intimacy with Mr. Upham, who had often expressed to him his great interest in the various clergymen of the city, without regard to sect or denomination; also of his valuable advice as to the best method of professional life; of his interest in the Institute and its objects; of his extensive knowledge of books in the various departments of literature; of his quick intellect and cheerfulness of mind to the end of life.

After further remarks from Messrs. C. H. Higbee and A. C. Goodell, Jr., the resolutions were unanimously adopted.

Rev. E. S. ATWOOD said that some more formal notice should be taken of the death of so distinguished a member of the Institute, and suggested that it might be well to hold, at some future time in the rooms of the Society, a memorial meeting, at which time a memoir of the deceased should be read, and moved that a committee be appointed to consider the subject. The motion was adopted, and Messrs. E. S. Atwood, E. C. Bolles, H. K. Oliver, A. C. Goodell, Jr., and F. W. Putnam were appointed as the Committee.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., AUGUST, 1875. No. 8.

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FIELD MEETING AT BYFIELD, THURSDAY, JULY 1, 1875.

THE second field meeting of the Essex Institute for the present season was held this day, at Byfield, a locality highly suitable for a gathering of this character; its historical associations cannot fail to interest the student in our local history, and its diversified scenery and natural conditions offer a wide field for the exploration of the naturalist.

This territory, through which the Parker River flows, having upon its adjacent interval lands some of the most fertile farms of the county, was granted in 1635, a large portion on the south side to Richard Dummer and on the north to Henry Sewall, whose descendants have ever since held prominent positions in the history of this country. These lands, more especially that portion near "The Falls," so called, were first used for the keeping of cattle and sheep that came over in the Dutch ships in 1635, and were owned by Richard Dummer, Henry

Sewall and Richard Saltonstall. It appears that for several years afterwards attention was given to the raising of sheep in this place.

The people living in this territory, part of which is in the township of old Newbury and part in that of old Rowley, being at a distance from the churches of the two towns, in 1702 built a church and established a parish under the name of "Rowlberry." In November, 1706, it was organized as the "Falls Parish," and Rev. Moses Hale was settled as the first minister. In 1710 it was incorporated as that of Byfield in honor to Nathaniel Byfield,¹ a liberal benefactor to the parish.

To visit this place the members of the Institute and their friends took the cars of the Eastern Railroad, the principal portion at Salem, the others at the several stations on the route, for Newburyport and thence proceeded to Byfield, six miles distant, in barges furnished by Mr. Enoch T. Northend, proprietor of the Newburyport and Amesbury Horse Railroad. The route taken was somewhat circuitous in order to favor the party with an inspection of the mining region and other notable places in the vicinity. A halt was made near the Highfield mines, where an hour was pleasantly passed in examining the grounds and witnessing the mining operations, by the courtesy of Messrs. Patterson, Chipman and Boynton.

At the Boynton Mine, in charge of Mr. Robertson, the shaft is the deepest in the whole district. The ore last taken out is the best. The Chipman works, under the care of Mr. Patterson, have assumed an orderly and pros-

¹ Col. Nathaniel Byfield, son of Rev. Richard Byfield of Long Dutton in Sussex, came to New England in 1674. He was speaker of the House of Representatives in 1693; a colonel, Judge of Probate and Common Pleas for the new county of Bristol, afterwards of Suffolk, also of his Majesty's Council, etc. He died June 6, 1733.

perous appearance. A new building has been erected, 65 × 30 feet with attachments, that give an engine house, a blacksmith and machine shop, pumping gear, tool room, office and shaft-house combined. All the machinery is said to be of the most approved kind. The mine has been timbered. From the depth now obtained, seventy-five feet, laterals are being run out north, east and south.

The next stopping place was at the fork of the road near the "Longfellow house," the "Indian burial grounds" and the "cave." All three of these places were visited. The house in which the great-grandfather of the present Henry W. Longfellow was born is on a sightly spot, surrounded by rich, smooth fields. It is now in a dilapidated condition. It was probably built in the early part of the last century by Stephen Longfellow, a son of William,² the emigrant ancestor, who came in his youth to Newbury, and married, Nov. 10, 1678, Ann, daughter of Henry

² William Longfellow,¹ born about 1651, in Hampshire, Eng., came in his youth to Newbury; m. Nov. 10, 1678, Ann, daughter of Henry Sewall. He was ensign of the company that embarked in the expedition of Sir Wm. Phips against Quebec, and with nine others was shipwrecked on the return at Anticosti (one account says Cape Breton) in October, 1690.

Stephen Longfellow,² son of the above, b. at Newbury 22 Sept., 1685; m. 25 Mar., 1713, Abigail, daughter of Rev. Edward Tompson of Marshfield. He was a lieutenant and a selectman; d. 17 Nov., 1764, at Byfield.

Stephen Longfellow,³ son of the above, b. at Byfield 7 Feb., 1723, gr. Harv. Coll. 1742; went to Portland Apr. 11, 1745, and opened a school. He was for many years one of the most active, useful and intelligent men in the town; town clerk, register of Probate and clerk of Judicial Courts; he married in 1749 Tabitha Bragdon, of York, Me. He died at Gorham, Me., in 1790.

Stephen Longfellow,⁴ son of the above, born at Portland in 1750, went to Gorham in 1775. He was largely employed as a surveyor, selectman, etc. Judge of C. C. P., Rep. & Senat. in State Legis. In 1773 m. Patience Young of York, Me. He died in Gorham in 1824, aged 74 years.

Stephen Longfellow,⁵ son of the above, born in Gorham Mar. 23, 1776, gr. Harv. Coll. 1798, studied law, and on being admitted to the bar in Portland he entered at once upon a large practice and stood in the front rank of able counsellors; member of the Hartford convention in 1814, also a member of U. S. Congress. He died Aug. 2, 1849.

Henry W. Longfellow,⁶ son of the above, born at Portland, Feb. 27, 1807, gr. Bowd. Coll. 1825. Prof. at Bowdoin and at Harvard. Poet. Resides at Cambridge.

Sewall,³ and this land was part of the estate which she received from her father, and is now occupied by Mr. Joseph Longfellow, a lineal descendant.

Byfield factory, probably the site of the first cotton mill in the country, was then visited. At this place, about 1790, Jacob Perkins, the well known inventor (born at Newburyport, July 9, 1766, died at London, July 30, 1849), put up a small mill and first demonstrated the practical working of his machine for cutting and heading nails at one operation. This invention, though, it is said, not a pecuniary success to the inventor, has since its introduction completely revolutionized the mode of manufacturing nails. Here Paul Moody in his youth found valuable instruction and satisfactory employment, and laid the foundation of a brilliant career as a mechanic, and whose name will be always identified with the introduction of manufacturing industries in Waltham and Lowell. A mile further on was noticed, shaded by elms, the residence of the second minister of the

³ Children of Henry Sewall:—

1. *Hannah*, born at Tamworth, May 10, 1649; m. Jacob Tappan of Newbury, Aug. 24, 1670; d. Nov. 12, 1699.

2. *Samuel*, b. Bishopstoke, Hants, March 28, 1652; gr. Harv. Coll. 1671; m. Feb., 1675-6, Hannah, daughter of John Hull of Boston, Judge Sup. Court, Mass., and Ch. Justice; d. Jan. 1, 1729-30.

3. *John*, b. at Baddersly, Hampshire, Eng., Oct. 10, 1654; came to New England in 1661; m. Hannah Fessenden of Cambridge, Oct. 27, 1674; lived with his father at Newbury, and there died before him, Aug. 8, 1699.

4. *Stephen*, b. at Baddersly, Aug. 19, 1657; m. Margaret, dau. of Rev. Jona. Mitchell of Cambridge, June 13, 1682; resided at Salem, where he was Register of Deeds for Essex, etc.; d. Oct. 17, 1725.

5. *Jane*, b. at Baddersly, Oct. 25, 1659; m. Moses Gerrish of Newbury, Sept. 24, 1677; d. Jan. 29, 1716-17.

6. *Ann*, b. at Newbury, N. E., Sept. 3, 1662; m. 1678, William Longfellow, who was drowned Oct., 1680; she had for a second husband Henry Short of Newbury, and died Dec. 18, 1706.

7. *Mehitable*, b. at Newbury, May 8, 1665; m. William Moody of Newbury; d. Aug. 8, 1702.

8. *Dorothy*, b. at Newbury, Oct. 29, 1668; m. 1st, Ezekiel Northend of Rowley, Sept. 10, 1691; 2nd, Dec. 23, 1732, Moses Bradstreet of Rowley, whose widow she died June 17, 1752.

parish, Rev. Moses Parsons, from June 21, 1744, when he was ordained, until his death, Dec. 11, 1783. In this house was born, Feb. 24, 1750, his son Theophilus Parsons, the eminent jurist, Chief Justice of the Supreme Court of Massachusetts from 1806 until his decease, Oct. 30, 1813. The house was built, probably, in 1706.

About noon the party arrived at Dummer Academy, which is situated in a retired and shady spot at the intersection of several roads. This school was organized, in accordance with the will of its patron and founder, in 1763, during the provincial period of our history, under the direction of Samuel Moody,⁴ the first Principal. Mr. Moody had previously been so successful as a teacher in his native town, York, Me., that twenty-eight pupils were present at the opening. For many years the number of scholars averaged over seventy, and it is inscribed upon his tombstone:—"He left no child to mourn his sudden death (for he died a bachelor), yet his numerous

⁴William Moody,¹ probably the ancestor of all the Moodys in this section of the country, came in 1634 (it was said a saddler) from Ipswich, Co. of Suffolk. He was first of Ipswich, afterwards in 1635 of Newbury, where he continued to reside. He died Oct. 25, 1673. He had three sons.

1. Rev. Joshua Moody,² Harv. Coll., 1653, of Portsmouth and Boston; died July 4, 1697.

2. Caleb Moody,² married 1st, Sarah Peirce; 2nd, Judith Bradbury. He died Aug. 25, 1698.

Rev. Samuel Moody,³ son of the above Caleb, b. Jan. 4, 1676; Harv. Coll. 1697; of York Me.; died Nov. 13, 1747.

Rev. Joseph Moody,⁴ son of Rev. Samuel, born in 1700; Harv. Coll. 1718; died Mar. 20, 1753, of York, Me.

Rev. Samuel Moody,⁵ the preceptor of Dummer, son of the above Rev. Joseph.

3. Samuel Moody,² married Mary Cutting Nov. 9, 1657; died April 4, 1675.

William Moody,³ son of Samuel above, born June 20, 1663; married Mehitable Sewall Nov. 15, 1684 (see note on page 116); resided in Byfield; died Feb. 6, 1729-30.

Deacon Samuel Moody⁴ of Newbury, son of the above William and Mehitable, born March 21. 1689; died May 25, 1767.

Paul Moody⁵ of Newbury, son of the above Samuel, d. Dec. 30, 1822, aged 80; his widow Mary, d. March 10, 1825, aged 82.

Paul Moody⁶ the distinguished mechanic, son of the above Paul and Mary, b. at Newbury, May 23, 1779; died at Lowell, July 7, 1831.

pupils in the United States will ever retain a lively sense of the sociability, industry, integrity and piety, he possessed in an uncommon degree; as well as the disinterested, zealous, faithful and useful manner in which he discharged the duties of the Academy for thirty years. He died at Exeter, Dec. 14, 1795, aged seventy."

The school was not in session. Tables were spread on the green in front, beneath the trees, and a refreshing lunch was soon prepared.

At 2.30 P. M. the afternoon session was held in the study room of the Academy. The PRESIDENT in the chair.

The records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From W. P. Andrews, May 15; D. M. Balch, May 15; Bureau of Education, Washington, June 23; E. P. Boon, New York, June 13, 28; Cornell University, June 28; Henry B. Dawson, Morrisania, N. Y., June 23; David B. Gould, May 31; Loughton & Brothers, Isle of Shoals, June 10; Charles Lawrence, Danvers, June 25; Joel Munsell, Albany, N. Y., June 22; W. D. Northend, June 24; C. L. Peirson, Boston, June; John Robinson, May 11; M. C. D. Silsbee, Boston, June; J. H. Stevens, June 26; James Upton, June 3, James S. Williams, May 27; Naturforschende Gesellschaft, Danrig, May 10; Historical Society of Pennsylvania, Philadelphia, May 19; K. K. Zoologische-botanische Gesellschaft.

The following additions to the library were reported :—

By Donation.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Proceedings, at Hartford, Conn., Aug., 1874. 1 vol. 8vo.

BOLLES, E. C. Theological Discussion. 1 vol. 12mo. The School. 1 vol. 12mo. Celestial Scenery. 1 vol. 12mo. The Ladies' Repository from 1839 to 1866.

BOLTON, H. CARRINGTON, of Columbia Coll., N. Y. Centennial of Chemistry, Aug. 1, 1874, at Northumberland, Pa. 4to pamph.

BUREAU OF EDUCATION, Washington. Circulars of Information, Nos. 1, 2, 1875.

CABOT, MRS. J. S. Transactions of the American Pomological Society for 1860. 1 vol. 8vo. Agriculture of Mass. 1857. 1 vol. 8vo. Miscellaneous pamphlets, 72.

CLEVELAND, MRS. W. S. Six Plans drawn by Jona. P. Saunders in 1837, of Acaapulco Harbour, Coast of Africa. Low and Society Islands. Cathburts Bay, Is. of Tootoillo, Navigators Group. Sandwich Islands. Marquesas, or Washington Islands. Galapagos Islands.

DALLETT, GILLIES. Philadelphia Directories, 1844, 1847, 1849, 1851, 1852, 1853, 1855, 1857, 1861, 1862, 1863, 1864, 1870, 1871.

GOULD, DAVID B., of St. Louis, Mo. Directory of St. Louis, for years 1871, 1872, 1873, 1874, 1875. 5 vols. 8vo.

GREEN, S. A., of Boston. Boston Municipal Register, 1873. 1 vol. 8vo. Miscellaneous pamphlets, 25.

LAWRENCE, CHAS., of Danvers, Mass. Moore's View in France, 2 vols. Fitzosborne's Letters, 1 vol. Gisborne on Christian Religion, 1 vol. Life and Labors of Dr. Worcester, 2 vols. Heydone's Tour, 2 vols. Life of Washington, 5 vols. Franklin's Sermons, 3 vols. Chalmer's Sermons, 1 vol. View in Italy, 1 vol. Life of P. Henry, 1 vol. Siege of Valencia, 1 vol. Notes on Travel, 1 vol. Sacred Biography, 3 vols. History of the Sandwich Islands, 1 vol. Garden Directory, 1 vol. Chapter on Flowers, 1 vol. Diseases of Animals, 1 vol. Barton's Poems, 1 vol. Mayor's Voyages, 17 vols. Book of Fruits, 1 vol. Treatise on Bees, 1 vol. Complete Farmer, 1 vol. Manual for Farmers, 1 vol. Memoir of Mrs. Hemans, 1 vol. Memoir of S. Green, 1 vol. Duffel's Dictionary, 3 vols.

LEE, JOHN C. Commercial Bulletin, May 8, 15, 22, 29, June 5, 12, 19, 1875.

LORING, GEO. B. Agriculture of Mass.; by C. L. Flint. 1874-5. 1 vol. 8vo. Thirty-second Registration Report of Mass. 1 vol. 8vo. Sixth Annual Report of Mass. State Board of Health. 1 vol. 8vo. Eleventh Annual Report of Mass. State Board of Charities. 1 vol. 8vo. Sixth Annual Report of Mass. Board of Railroad Commissioners. 1 vol. 8vo.

MASS. HORTICULTURAL SOCIETY. Transactions of, for 1875. Part I.

MERRIAM, G. & C., of Springfield, Mass. Webster's Unabridged Dictionary. 1 vol. Royal 4to. 1875.

OFFICE OF THE CHIEF OF ENGINEERS. Report upon the Reconnaissance of Northwestern Wyoming, 1873, by W. A. Jones.

OSGOOD, CHAS. S. Legislative Documents for 1875. 4 vols. 8vo.

PHILA. ZOOLOGICAL SOCIETY. Third Annual Report. 1875. 8vo pamph.

PUTNAM, F. W. Archæological Researches in Kentucky and Indiana. 1874. 8vo.

RABARDY, J. F. Manchester, Mass. The Beetle and Wedge. Feb. to June, 1875.

STONE, E. M., of Providence, R. I. Thirty-third Annual Report of the Ministry at Large. 1875. 8vo pamphlet.

STONE, MRS. J. H. Masonic Monthly, 15 Nos. American Homes, 11 Nos. Hunt's Merchant Magazine, 55 Nos. Yankee Farmer, 1838, 1839, 1840, 1841. Miscellaneous pamphlets, 10.

U. S. PATENT OFFICE. Official Gazette for Apr. 20, 27. May 4, 11, 18, 25, 1875.

WILLIAMS, B. W. Lecture Bureau for 1875-6. 8vo pamph.

YOUNG MEN'S ASSOCIATION OF BUFFALO. Thirty-ninth Annual Report. 8vo.

By Exchange.

ACADEMIE ROYALE DES SCIENCES, DES LETTRES ET DES BEAUX-ARTS DE BELGIQUE. Bulletins. Tome xxxv, xxxvi, xxxvii, 1873-4. 3 vols. Annuaire, 1874.

AMERICAN ACADEMY OF ARTS AND SCIENCES. Proceedings. Vol. II. May, 1874, May, 1875.

AMERICAN PHILOSOPHICAL SOCIETY. Proceedings. Vol. XIV. Jan., June, 1875.

AMHERST COLLEGE. Catalogue of Officers and Students for 1874-5. 8vo pamph.

BOSTON SOCIETY OF NATURAL HISTORY. Proceedings, xiv to xvii. Memoirs, Vol. 2, pts. 1, 2, 3, and No. 1 of pt. IV.

BUFFALO SOCIETY OF NATURAL SCIENCES. Bulletin of. Vol. II, No. 4.

CROSSE ET FISCHER. Journal de Conchyliologie. Tome xv. 3e Série, No. I, 1875.

ENTOMOLOGISCHE ZEITUNG, STETTIN. Vol. for 1874. 1 vol. 12mo.

GEOLOGICAL SURVEY OF INDIA. Memoirs of. Vol. x, pt. 2, 1873. Vol. xi, pt. 1, 1874. Records of. Vol. vii, pt. 1-4, 1874. Palæontologia India. Vol. I, pt. I, 1874.

- INSTITUT HISTORIQUE. L'Investigateur. Dec., 1874. Jan., Feb., 1875, 8vo.
- INSTITUT NATIONAL GENEVOIS. Bulletin, Tome xx. 1875.
- K. K. ZOOLOGISCH-BOTANISCHEN GESELLSCHAFT IN WIEN. Verhandlungen, Band xxiv, 1874. 1 vol.
- KÖNIGLICHE GESELLSCHAFT DER WISSENSCHAFTEN GOTTINGEN. Nachrichten. 1874. 1 vol. 12mo.
- MASS. HISTORICAL SOCIETY. Proceedings. 1873-1875. 1 vol., 8vo.
- NATURFORSCHENDE GESELLSCHAFT, GOILITZ. Abhandlungen, Band xv, 1875.
- NEW YORK LYCEUM OF NATURAL HISTORY. Annals. Vol. XI. Nos. 3, 4.
- SOCIÉTÉ D'ACCLIMATATION, PARIS. Bulletin Mensuel. Tome I, 3me Serie. Nov., Dec., 1874. Tome II, 3me Serie. Jan., 1875. 3 pamphlets, 8vo.
- SOCIETY D'ANTHROPOLOGIE, PARIS. Bulletins, Apr., June. 1874.
- SOCIÉTÉ DES SCIENCES NATURELLES DU GRAND-DUCHÉ DE LUXEMBOURG. Publications, Tome XIV. 1874. Observations Meteorologiques faites a Luxembourg. Deuxieme vol. 1874.
- SOCIÉTÉ VAUDOISE DES SCIENCES NATURELLES, LAUSANNE. Bulletin. Vol. xiii, No. 73. Dec., 1874.
- VEREIN ZUR BEFÖRDERUNG DES GARTENBAUES BERLIN. Monatsschrift, Jahrg. xvii, 1874.
- ZEITSCHRIFT FÜR DIE NATURWISSENSCHAFTEN IN BERLIN. July to Dec., 1874.
- ZOOLOGISCHE GESELLSCHAFT, FRANKFURT. Zool. Garten. Vol. XV. No. 7-12.
- PUBLISHERS. American Journal of Education. American Journal of Science and Arts. American Naturalist. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Sailor's Magazine. Salem Gazette. Salem Observer. Salem Register. Salem Post. The European Mail. The Owl. Turner's Public Spirit.

The PRESIDENT then made a few preliminary remarks, describing the excursion from Newburyport to this place, and the historical localities visited. He also gave a brief biographical sketch of the Sewall family, on whose ancient domain at the factory they made a halt. He called upon Hon. William D. Northend of Salem, who was born in Byfield, and there had spent his early years, to give some account of Byfield, of Dummer Academy, the founder, the teachers and the alumni.

Hon. WILLIAM D. NORTHEND, in response, gave a very interesting sketch of Byfield and Dummer Academy. He remarked that the parish is a religious one, and at no time during the last century has it numbered over one hundred families; probably no place of its size, in the United States, can present such a record of notable men. Regarding them and the Academy he said:

Richard Dummer of Bishopstoke, Hants, England, son of John, born there in 1599, came to New England in 1632, and was among the first settlers in Newbury. He afterwards went to England, but returned in 1638 with his brothers Stephen and Thomas. He prospered and became a man of great wealth, and owned much land in this parish, including the grounds which this Academy now occupies; his sons Jeremiah, Richard, and Rev. Shubael held prominent positions in society; he died Dec. 14, 1679. His grandson, Jeremy Dummer, son of Jeremiah, was the agent of the colonies in England from 1710 to 1721, and advocated their claims with great ability. He is well known as the author of "a defence of New England Charters;" and a "letter concerning the expedition to Canada." He died May 19, 1739, aged 60.

Another grandson, a brother of Jeremy, William Dummer, was Lieut. Governor of the colony, and for a time was acting Governor; his administration was a wise one, and he was much respected by the people. His wife was Catherine, daughter of Gov. Joseph Dudley. He died *s. p.* 10 Oct., 1761, aged 84 years. This farm was his country seat, and the mansion to the right of the Academy was built by him after the old English style.

Henry Sewall, only son of Henry who followed him to New England, and died in Rowley, March, 1656-7, in the 81st year of his age, and grandson of Henry who was several times mayor of Coventry, was born in 1614, came to New England in 1634 plentifully supplied with money and English servants, neat cattle and provisions, and with other things suitable for the commencement of a plantation, removed to Newbury in 1635, where he became proprietor of a large tract of land known as the Highfields, at the Falls within this parish.

He married, March 25, 1646, Jane, eldest daughter of

Stephen Dummer. In 1646 he went to England, but returned in 1659, his family following in 1661, and resided in Newbury until his decease, which occurred May 16, 1700, at the age of 86 years. From this marriage came all the Sewalls in this part of the country. His son, Samuel Sewall, was Judge of the Supreme Court of the Massachusetts colony from 1692 to 1728, ten years of which he was Chief Justice; Stephen, son of his son Stephen, was Justice of the same court from 1739 to 1760, eight years of which he was Chief Justice; David, grandson of son John, was Justice of the same court from 1777 to 1790; Samuel, great-grandson of son Samuel, was Justice from 1800 to 1814, and the last year Chief Justice. Therefore from the descendants of Henry and Jane Sewall the Supreme Court of this state was furnished with Judges for eighty-two years, and Chief Justice nineteen years. It may be added that Judge David Sewall, named above, after his resignation was many years Judge of the U. S. District Court in Maine. Jonathan Sewall, likewise a nephew of Chief Justice Stephen, was Attorney General of Mass., 1767-75, and Jonathan and Stephen, sons of the above Jonathan, were respectively Chief Justice and Attorney General of the Province of Lower Canada. From the same family have been a large number of distinguished men of the clergy, especially in this state and Maine, and some in other professions of life. It is doubtful if any one family in the country has furnished a larger number of more distinguished men.

Henry Sewall, either by deed or bequest, gave these lands to three of his daughters; that portion adjoining the "Falls" to his daughter Mehitable, wife of William Moody. Many of the descendants of his grandfather, William Moody, the emigrant ancestor, were distin-

guished, among whom may be mentioned Paul Moody, the mechanician, who was one of the most influential persons in the building of the manufactories at Lowell, and Samuel Moody, the celebrated teacher of Dummer Academy. This estate has continued in the family until the present generation.

The portion known as "Highfields" was given to his daughter Anne, wife of William Longfellow. After his death she married Henry Short. She had children by both marriages. The Longfellows in the second generation purchased the share of the Shorts, and the farm was then divided between Stephen Longfellow and his sister Ann, who married Abraham Adams.⁵ A large part of the Longfellows' portion has been and is now owned by descendants of the name. Joseph Longfellow is the present owner of a portion of it. Abraham Adams' share is now owned by his descendants, divided, however, into several farms. From William Longfellow has descended a man whose name need only to be spoken, Henry W. Longfellow, the poet. His great-grandfather was born in the house which was visited by you this morning. He emigrated to Maine in 1745. Stephen, the grandfather of Henry W. Longfellow, was a Judge of the Court of Common Pleas, and his father, Stephen, was a distinguished lawyer and member of Congress.

The third portion of the estate was given to his daugh-

⁵Capt. Abraham Adams, b. May 2, 1676; pub. to Anne Longfellow Nov. 13, 1703; d. April 8, 1763. Ann, his wife, d. Feb. 4, 1758, aged 74 yrs., 11 mo. He was the son of Serg. Abraham Adams, b. in the year 1639; m. Nov. 10, 1670, Mary Pettingill. He died June 14, 1714, aged 75. His wife Mary died Sept. 19, 1705. A grandson of Robert Adams, who with his wife Eleanor came to Ipswich in 1635, thence to Salem, 1638, finally settled in Newbury in 1640. He died Oct. 12, 1682, aged 81. His wife Eleanor d. June 12, 1677. His second wife, Sara, widow of Henry Short, whose maiden name was Glover, to whom he was married Feb. 6, 1678, d. Oct. 24, 1697.

ter Jane, wife of Moses Gerrish,⁶ from whom was descended many persons of note. This portion of the original estate for the last two or three generations has been sold out of the family.

Other lands in Newbury were given to his daughter Dorothy Northend,⁷ and lands within the present limits of Newburyport to his daughter Hannah Tappan, probably where is now Tappan's lane. In this connection allusion has been made principally to the disposition of that portion of his estate lying in the parish of Byfield.

Mr. Northend then mentioned the names of several distinguished persons who were born, or had their residence, in this parish. The following may be specified.

Theophilus Parsons, the most distinguished jurist in Massachusetts; John S. Tenney, the late distinguished Chief Justice of the Supreme Court of Maine, was born in the Rowley part of this parish, as was also Samuel Tenney, a Judge of the Court of Common Pleas of New Hampshire; Samuel Webber, President of Harvard University; Prof. Eliphalet Pearson of Harvard and Andover, Prof. John Smith of Bangor Seminary, and Parker Cleaveland, the distinguished Professor at Bowdoin College, were all born within the limits of this parish. Here was also settled the distinguished political preacher, Rev. Dr. Elijah Parish, who in the war of 1812 fulminated against the acts of the General Government, and whose

⁶ Moses Gerrish, born May 9, 1656; m. Sept. 24, 1677, Jane Sewall; died Dec. 4, 1694, aged 38; resided in Newbury. His widow Jane d. Feb., 1716. He was a son of Capt. William Gerrish, who came from Bristol, England, about the year 1640, and settled at Newbury; m. April 17, 1645, Joanna, widow of John Oliver, and became the founder of a family which properly assumed a leading position in the colony. His brother Benjamin was a prominent citizen of Salem. See Hist. Coll. Essex Inst., vol. II, page 213, and vol. V, page 25. His brother Joseph was the third pastor of a church in Wenham; b. at Newbury, March 23, 1650; ord. Jan. 13, 1675; d. Jan. 6, 1720.

⁷ For an account of the Northend Family see Hist. Coll. Essex Inst., vol. XII, p. 71.

speeches were quoted in the famous discussions of Webster and Haynes.

[In addition to those of Byfield descent mentioned by Mr. Northend we would add the names of Rev. John P. Cleaveland, D. D., Hon. Albert Pike, the poet, lawyer, etc., of Little Rock, Ark., and Rev. Sewall Tenney, D. D., of Ellsworth, Me.

Mr. Charles Northend of New Britain, Conn., and Hon. William D. Northend of Salem, are lineal descendants of Ezekiel and Dorothy (Sewall) Northend, and many of the name of Tappan in New England are descendants of Jacob and Hannah (Sewall) Tappan.⁸—Eds.]

Dummer Academy was established by Gov. Dummer, who left for its endowment this farm of 400 acres, with the buildings upon the same. It first went into operation in 1763, and was the first institution of the kind in the state. The first teacher was the celebrated Samuel Moody, the Dr. Busby of America. Of those who attended his school, two were afterwards Presidents of colleges, nine were Professors, eleven were Judges of the Courts, nineteen were members of the House of Representatives at Washington, five were members of the U. S. Senate, one a member of the Cabinet, and one was minister to England.

Mr. Moody retired in 1790, and his successor was Rev. Isaac Smith, followed successively by Benjamin Allen, Rev. Abiel Abbott, Samuel Adams, Nehemiah Cleaveland and others. Among those who were under their tuition are enrolled many who have become eminent in the several professions and worthy members of society.

⁸Jacob Tappan, born in 1644; m. Hannah Sewall Aug. 24, 1670, who died Nov. 12, 1699. He d. Dec. 13, 1717. He was son of Abraham Tappan, who came to Newbury in 1637, m. Susanna Goodale of Yarmouth, Eng., who d. March 20, 1689. He died Nov. 5, 1672, aged 64.

It is a matter of regret that this institution, so well situated for the education of youth, should have suffered so much from neglect, and it is to be hoped that efforts will be made to place it again in the position it held in the past.

Dr. JEREMIAH SPOFFORD spoke of the character of Dummer Academy, which he had known for seventy-five years. He had the honor of Dr. Parish's acquaintance, and had met Dr. Cleaveland in council. The former was a most forcible speaker, and a bitter enemy to the Democratic party. The latter had greater education than many about him who had greater practice, but he was too dignified for his position.

Mr. FREDERICK W. PUTNAM gave an account of the few zoological specimens he had collected about the grounds of the Academy, and in a small neighboring brook. He specially described the structure of the galls on the wild rose, and described the insects by which they were made. He also exhibited a colony of Polyzoa, of a species quite abundant on the stones in the brook, and described their different stages of growth, which were so fully illustrated by Prof. Hyatt several years since, in the Proceedings of the Institute.

Mr. JOHN ROBINSON of Salem talked about the plants which he had collected, remarking that every one should know enough of botany to be able to distinguish the poisonous plants. Ivy and dogwood were the only ones in Essex County. With the latter he thought that few persons were acquainted. He then spoke of the fertilization of plants by insects, and made a few remarks on the growth of the fungi.

Mr. HAYDN BROWN of West Newbury said the influence of Dummer Academy is felt for miles around in the manners of the people. The past of the Academy was secure, but he doubted of the future. The days of private institutions were past, now that the state provides high schools of the same grade. He thought there were but few academies self-sustaining.

He then changed his subject and spoke of the insects that devour his crops. He thought that at least a quarter part of our crops of almost every kind was eaten up by these pests, and he suggested that the members of the Institute, and especially its naturalists, should turn their attention towards the discovery of some mode for the extermination of the insect pests.

The PRESIDENT said that it would facilitate Mr. Brown's crusade on noxious insects if local museums were established, and children become interested in collecting specimens, and studying the habits of the various plants and animals that are continually met with.

AMOS NOYES, Esq., of Newburyport, considered the fact referred to by Mr. Brown, that academies were declining, was a sign of progress. We had outgrown them and they could not and should not compete with state schools.

Rev. Dr. SAMUEL J. SPALDING of Newburyport, spoke of the Byfield Academy, which grew out of Dummer, and which sent out many eminent teachers, whose influence still pervade the schools of the country. He thought that private institutions were not in their decadence. Athens had no schools, but the responsibility of education was thrown on individuals, and what sages she pro-

duced. The state cannot do everything, as some would have it, regulate our meat and drink and hours of labor. Dummer Academy had lately adopted an improving element in the admission of girls, and there were no public institutions to-day for young ladies so good as private ones.

Dr. JEREMIAH SPOFFORD agreed with the last speaker that all the business of education should not be done by the state.

Messrs. PUTNAM and BROWN here reopened the question of injurious insects. Mr. Putnam said that science was equal to the destruction of many kinds of insects that prey on the crops of the farmer, and if farmers would only work together they could exterminate their insect enemies. For instance, printer's ink is a sure exterminator of the canker worm. Printer's ink has exterminated many evils, and here was one more it could cope with, if all the farmers in a given section would apply it to their trees. Here was one case at least where the state should interfere and make a law requiring every man to assist in abating the canker worm nuisance who had a tree liable to be attacked by these insects.

Mr. BROWN replied that he could take care of the canker worm and caterpillar, but he would give a gold medal to the man who would eradicate other insects which infest his farm.

On motion of Mr. PUTNAM :

Voted, That the thanks of the Institute be tendered to Mr. and Mrs. Ebenezer G. Parsons, the Principals of the Academy, for their courtesy and kindness so generously extended to the party during the day.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., SEPT. AND OCT., 1875. Nos. 9 & 10.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, WEDNESDAY, JULY 7, 1875.

THIS was an adjournment of the meeting held on Monday, July 5. PRESIDENT in the chair.

Mention was made that several members of the Institute and their friends chartered the new, safe, and commodious steamer "Governor Andrew," for an excursion which took place on Monday, June 14, from Salem harbor along the eastern coast to the Isles of Shoals, with a view to deep sea dredging and the collection of specimens of the marine fauna and flora of that group of Isles.

The steamer "Governor Andrew" is a new boat, built last year for the Boston and Hingham line, and is finely modelled and furnished, making one of the best excursion steamers in the waters of Massachusetts Bay. The weather was pleasant; the sail along the shore was very enjoyable, and the familiar scenery of the rock-bound and wooded coast, dotted here and there with the residences of the summer visitors, never looked more attrac-

tive. The boat stopped at Gloucester and took on board some twenty-five or thirty more of the party, and from there sailed direct to the islands, arriving about noon. The party landed at "Star Island," and was hospitably received by the proprietor, John A. Poor, Esq. Some two hours were pleasantly and profitably spent in examining the peculiar geological features, the fauna and the flora. The student in history also found much of interest. The monument erected to the memory of Capt. John Smith, recalled the scenes incident in the first part of the 17th century, when these islands were visited by Champlain, John Smith, and others of those early voyagers who navigated these seas before the landing of the Pilgrims at Plymouth. The old stone church, with the adjoining burial ground in the stony soil, and its many graves marked by rude stones, two of which were prominent, one in commemoration of Rev. John Tucke, A. M., died Aug. 12, 1773, aged 72, the other in memory of Rev. Josiah Stevens, died July 2, 1804, aged 64 (two of the old divines who Sunday after Sunday were wont to minister at the sacred desk to these people), marked another period in the history of these isles when in the occupancy of the hardy fishermen. Times have changed greatly within the last quarter of a century, and now they have become fashionable watering places, and on two of them, "Appledore" and "Star," have been erected large and commodious hotels, that are thronged with visitors during the heated term.

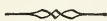
In recognition of the civilities and courtesies extended to the party during this excursion to the Isles of Shoals, it was, on motion of Mr. JOHN ROBINSON :

Voted, That the cordial thanks of the members and friends of the Essex Institute who participated in the

recent excursion to the Isles of Shoals are hereby presented to John A. Poor, Esq., of the "Oceanic" on Star Island, for his kindness in inviting the party to land at the island, and also for his various acts of courtesy shown to the excursionists during their stay.

Messrs. John M. Hagar of Salem and C. W. Kempton of Newburyport, were elected resident members.

Adjourned.



FIELD MEETING AT CONCORD, TUESDAY, JULY 27, 1875.

THE third field meeting of the present season was held at Concord, this day, having been postponed from Friday on account of the rain. More than two hundred and fifty persons attended from Salem and vicinity, the unusually large number, eager to proceed to such an unwonted distance, evinced a lively continuation of the patriotic interest in this historic old town inspired by the events of the 19th of April, 1775, and freshly awakened by the commemoration of the present year.

An unfortunate delay in the arrival of the Bangor train at Salem diminished even the limited time of the stay at Concord, but the misfortune was partially remedied by the promptness of the Fitchburg Railroad officials in furnishing a special train to the excursionists immediately upon their arrival in Boston.

On reaching Concord the company rendezvoused at the elegant and unique Public Library building, the noble gift to the town from one of its citizens, Mr. William Munroe. It stands on a triangular plat at the junction of two streets and is a successful adaptation of the picturesque features of mediæval architecture to the requirements and mode of construction of the present day.

This place, with its collections, is worthy of a more thorough examination than the party was enabled to bestow. Here may be seen the busts of Plato, Agassiz, Emerson, Mann, Hawthorne, Brown, and Munroe, as well as several valuable historical relics. One alcove is devoted to the printed works of Concord authors from the settlement of the town to the present time.

From this point the company proceeded in groups to visit the various memorable places of this delightful old town. The citizens generally seemed to have put at the disposal of the visitors all their private vehicles, and themselves acted as guides and expositors. There was an outpouring of genial hospitality from first to last, that was thoroughly characteristic of the Concord people. Gentlemen of the highest reputation in State affairs and in literature devoted themselves to the entertainment of the strangers with an impartiality, earnestness, cordiality and assiduity which it was refreshing to witness, and the town officers united with the citizens generally to make the visit agreeable.

The first objective point was the old North Bridge, with its impressive surroundings, but we will not repeat the story so often rehearsed within the last few months. The newly erected statue of the minute man, designed by Daniel French, a young Concord artist, now in Italy, in Powers' studio, excited universal admiration, and is really one of the finest works in the country. An enhancement of the pleasure of those who were examining this sacred spot, and who could not help recalling the oft-repeated stanza :—

“By the rude bridge that arched the flood,
 Their flag to April's breeze unfurled,
 Here once the embattled farmers stood,
 And fired the shot heard round the world :”

was the fact of the presence of the author of the immortal poem of which this verse forms a part. Here also at the bridge, marked by a rude headstone, lie the remains of British officers killed in action, and near by stands the monument erected some time since in honor of the American soldiers engaged in the Concord fight.

Several of the visitors found delightful recreation on Concord River in the neat and convenient pleasure boats which were freely placed at the disposal of the party. Messrs. Morse, Putnam and Bolles visited a shellheap some two miles up the river, obtaining interesting specimens of Indian relics.

Among the places interesting to Salem people, because of their connection with their townsman, Hawthorne, was the old Manse, which is in the near vicinity of the North Bridge. Here Hawthorne resided for several years. Now, as he described it long ago, between two tall gateposts of rough-hewn stone, we behold the gray front of the old parsonage, terminating the vista of an avenue of black ash trees. It was built by the grandfather of Ralph Waldo Emerson, and its last inhabitant before Hawthorne occupied it was the venerable Parson Ripley, who had died about a twelvemonth before. It was from the study window facing the river that the clergyman, who then dwelt in the manse, stood watching the outbreak of a long and deadly struggle between two nations; he saw the irregular array of his parishioners on the farther side of the river, and the glittering line of the British on the hither bank; he awaited, in an agony of suspense, the rattling of the musketry. It came; and there needed but a gentle wind to sweep the battle smoke around this quiet house. Hawthorne says that the old manse had never been profaned by a lay occupant, until that memorable summer afternoon when he entered it as his home, in 1842. A

priest had built it; a priest had succeeded to it; other priestly men had, from time to time, dwelt in it; and children born in its chambers, had grown up to assume the priestly character. The latest inhabitant alone had penned in it nearly three thousand discourses, besides the better, if not the greater number, that had flowed living from his lips. Here Emerson wrote "Nature," and here Hawthorne sojourned, sending forth his "Mosses from the Old Manse" with the declaration :

"For myself the book will always retain one charm, as reminding me of the river, with its delightful solitudes, and of the avenue, the garden and the orchard, and especially the dear Old Manse, with the little study on its western side, and the sunshine glimmering through the willow branches, while I wrote."

The Old Manse is now the residence of Judge Ripley, who gave the visitors a kindly welcome.

We must pass over the visits to other places connected with the memory of Hawthorne, his later residence, his walk on the Ridge Path, and his grave; the home and haunts of Thoreau, the poet-naturalist, whose favorite Walden Pond, around whose borders he studied nature so closely and of which he wrote so delightfully, was passed on the way, and was the scene of a gay picnic party, who probably little thought of the man who had so often wandered on its former quiet banks; and of the many other objects of interest, which crowded a day which will be remembered with delight.

The dinner was spread in the vestry of the First Church, and here the ladies of Concord took the entire charge of the preparations, with a lavishness altogether opposed to the simple requirements of the Institute. The Concord ladies added largely to the ordinary refreshments, laid and decked the tables in a refreshing and

tempting style, while many of the younger portion constituted themselves fair waiting maids, and dispensed the viands with a grace and dexterity that added charm to the feast.

The afternoon session was held in the Town Hall, and was attended by a large audience, including Judge E. R. Hoar, Ralph Waldo Emerson, the venerable A. Bronson Alcott, Wm. W. Wheildon, and many others, including Concord's wisest and best and fairest citizens.

The PRESIDENT of the Institute called to order, and in his introductory remarks stated that this was the fourth field meeting held beyond the limits of Essex county; of these, one was at Wakefield, and another at Reading; as those towns were settled by Lynn people and were known as Lynn village, they probably at one period may have been considered as a part of Essex county, until the lines between Essex and Middlesex were adjusted. The third was at Kittery, Me., the residence of Sir William Pepperell, who was connected by marriage with some of our old Salem families. It was appropriate that the Institute should visit Concord, for several reasons. In the first place, to see the grave of a distinguished son of Salem, which is marked by two small, white marble stones, with the simple inscription "Hawthorne," of whose ancestry and birthplace a brief sketch was then given.¹

Secondly, it was fitting for the association to visit the town to which the Legislature adjourned from Salem in October, 1774, after having resolved itself into a Provincial Congress and assumed the powers of sovereignty, which event was duly commemorated by the Essex Insti-

¹ See Bulletin of Essex Institute, vol. 3, page 25, for a communication on "The Ancestry and Birthplace of Hawthorne."

tute, with an address from A. C. Goodell, Jr., Esq., on the 5th of October last, at the Institute rooms.²

The President next alluded to Concord as the home of Thoreau,³ the poet-naturalist, who had done so much to make us acquainted with the fauna and flora of Concord by his writings. It is, likewise, the place where was originated some two hundred years ago the famous Hunt's russet apple;⁴ and also, more recently, the widely known Concord grape so extensively and generally cultivated.

The President closed his remarks by briefly sketching the history and objects of the Institute, which is the usual custom at meetings held in a new locality.

Judge E. R. HOAR then came forward, and in behalf of his townsmen gave the members of the Institute a cordial welcome to Concord. He felt he but expressed the feelings of the people of the town when he said he was very glad to see them. The Judge continued in a humorous strain which elicited much laughter and applause. He alluded to their researches on and around the sluggish river, and to Hawthorne's declaration that it was the only river he ever knew that was too lazy to keep itself clean. His father, the Judge said, had a different idea. He thought the river hated to leave Concord! In illustration of the ignorance of many people on the sub-

² For an account and the address see Bulletin of Essex Institute, Vol. 6, page 160. The address is printed in full in the Historical Collections of the Essex Institute. vol. xiii, page 1.

³ Henry David Thoreau, b. July 12, 1817, gr. Harv. Univ. 1837, d. May 6, 1862, dedicated his genius with such entire love to the fields, hills and waters of this town that he made them known and interesting to the reading public. The river on whose banks he lived, he knew from its springs to its confluence with the Merrimack.

⁴ The Hunt russet apple, a good and desirable variety, is said to have originated on the Hunt farm, in Concord, located about one mile north of the village, on the south side of "Puntakasset" Hill, overlooking the old North Bridge of Revolutionary fame.

ject of natural history, he repeated a story told to him by Thomas Hughes, author of "School-days at Rugby," "Tom Brown at Oxford," and other popular books, when he was visiting at Concord. It was at the expense of one of the railroad guards of an English train. A lady in the same carriage with him had a pet rabbit, and the guard protested that the passenger car was not a proper place for it; whereupon a gentleman drew from his pocket a turtle, saying that he, the guard, would not think of ejecting that, and that the rabbit had as much right there as the turtle. The guard went to headquarters to determine the question, and returning said, "cats is dogs, and rabbits is dogs, and they must go in the baggage van; but turtles is insects, and they go free; and rabbits must pay." The Judge remarked that that was the only lesson that he ever received in natural history. He also alluded to the rivalry between the North Bridge at Salem and that at Concord, and claimed that the latter had at least the substantial fact of the graves of two British soldiers killed there. He further referred to Hawthorne, spoke of the important objects of the Institute, and concluded, as he began, by saying that he was glad to welcome the members to Concord.

PROF. E. S. MORSE was called upon for an account of his trip on the river. He said he had found plenty of heat, but very little else, as his time on the river had been very limited. He had been thinking what he should take for a subject, if called upon to make any remarks, and Judge Hoar's story of the tortoise had suggested the subject of turtles. It was astonishing to an Englishman to see the great number of turtles in this country; in England they are very rare. He proceeded to speak of the similarity between the embryos of turtles and those

of birds. No two families of vertebrates seemed to be more widely dissimilar in their development, yet there was a similarity almost amounting to identity in their embryonic forms. He illustrated this fact, and the gradual changes which result in the differences between them when they emerge from the eggs, by drawings on the blackboard, and briefly alluded to the points of similarity which are evident to a naturalist. To further illustrate this similarity he described a fossil skeleton found in Germany, which combined the wings and feathers of the bird with the vertebral development and teeth of the reptile. In closing, he alluded with great respect and admiration to the labors of Thoreau in Concord, to which the naturalists of the vicinity owe so much, and during further remarks announced himself a believer in the theory of Darwin.

Vice President F. W. PUTNAM gave an interesting account of his visit to the Indian shellheap on the river, from which Thoreau made the valuable collection of relics, now under his own charge at the archæological Museum at Cambridge. He was glad to have seen the place where Thoreau and Wyman had collected the relics alluded to. He also exhibited and commented upon about a dozen stone implements, of the shape of arrowheads, which had been picked up there, some of which were evidently intended for knives rather than arrow or spearheads, and gave a general account of the composition and formation of the shellheaps found on both coasts of America, on many of our river banks, and in nearly all other parts of the world.

Prof. MORSE, in answer to a question from Mr. Wheildon, explained how the ballooning spiders were suspended in the air.

Rev. E. C. BOLLES, of Salem, in some eloquent remarks, spoke of the microscopic forms of life to be found in Concord River, illustrating upon the blackboard, and explaining some of the wonders of the simplest forms and modes of growth of animal life.

Judge HOAR called attention to the importance of accurate observation, and to the difference between the observer of facts and mere theorists, illustrating his point by a pertinent law case which once came before him. It was the trial of a man for robbery. A farm house had been entered in the night, the door of the sleeping room secured so that the occupants could not get out, a lamp lit, and a desk rifled of quite a large sum of money. Suspicion rested on a man who had formerly worked on the farm, and it was brought out in evidence that at about that time he was seen to have a good deal of money, and the tracks about the farm house, the morning after the robbery, were made by a shoe the size of his, but all the evidence was circumstantial, and Judge Hoar on the bench and the jury in their box all thought that the government would fail to convict the prisoner. At last the government attorney called a neighbor who had visited the house on the morning after the larceny, and asked him if he found anything upon the floor of the room where the lamp had been lit. Yes, he had found a match about half burnt, evidently thrown down by the person who lit the lamp. Turning to the officer who arrested the prisoner, he enquired what he had found on his person when arrested, and among other things the officer produced half a card of matches. Taking the burnt match found upon the floor, and the half card found upon the prisoner, the government attorney showed the court and jury that the burnt match had manifestly been split from the card

in the prisoner's possession, as they fitted so exactly, and the grain of the wood ran in such a manner that there could be no doubt whatever in regard to the matter, and the man was found guilty of the robbery.

The Rev. GRINDALL REYNOLDS of Concord, alluded to some of the historic facts of the Revolution and of the similarity of events at the North Bridge in Concord, and the North Bridge in Salem. He also spoke of the value of such gatherings as the present, in the diffusion of knowledge combined with the pleasures of a summer's day picnic.

Prof. D. B. HAGAR, of Salem, after some highly complimentary remarks on the reception given by citizens of Concord to the Institute party, which were endorsed by the President and the entire company of visitors, offered the following resolutions, which were unanimously adopted :—

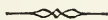
Resolved, That the hearty thanks of the Essex Institute are hereby presented to the selectmen of Concord, for the courteous invitation extended to the Institute to meet in this place, and for the free use of their Town Hall; to the authorities of the First Church for the accommodations kindly afforded by them; and to the ladies and gentlemen of Concord who have contributed so hospitably and abundantly to the entertainment of the Institute.

Resolved, That the Institute will hold in grateful remembrance the field meeting at Concord as one of the most delightful and profitable in all its history.

Resolved, That the thanks of the Institute are due to the officers of the Eastern and the Boston & Lowell Railroads for kind attentions, and to C. L. Heywood and John Adams of the Fitchburg Railroad, for their readiness in furnishing a special train for the party to Concord and for other courtesies.

At half-past five the meeting was closed and the company returned to Boston over the Lexington branch and Lowell roads, reaching Salem about eight o'clock, after one of the most interesting and delightful excursions ever participated in by the Institute.

Adjourned.



REGULAR MEETING, MONDAY, AUGUST 2, 1875.

Regular meeting this evening. The PRESIDENT in the chair. Records read.

The SECRETARY announced the following correspondence:—

From S. P. Boynton, Lynn, July 21; Boston Soc. Nat. Hist., July 17; Buffalo Hist. Soc., July 12; John J. Babson, Gloucester, July 9; Edward Cogan, Brooklyn, N. Y.; Concord, Selectmen of, July 12, 19, 23; Globe Publishing Co., Boston, July 19; Henry M. Greenough, Newburyport, July 7; D. B. Hagar, July 15; Charles W. Kempton, Newburyport, July 8; Kjobenhavn, K. Danske Videnskab. Selskab, June 29; Lowell Bleachery, July 9; New Jersey Hist. Soc., July 13; New York Hist. Soc., July 12; Ohio Hist. and Phil. Soc., July 13; Abner J. Phipps, Boston, July 3; John R. Poor, Boston, July 29; G. Reynolds, Concord, July 17; Royal Polytechnic Soc., Cornwall, July 12; Rhode Island Hist. Soc., July 12; Royal Soc. of Tasmania, July 23, 1874.

The LIBRARIAN reported the following additions:—

By Donation.

DUDLEY, DEAN. Directories:—Plymouth and Barnstable Counties, 1873-4; Hyde Park, Dedham and Canton, 1874; Quincy, Weymouth and Braintree, 1873-4; Cambridge, 1872; Brookline, Jamaica Plain and West Roxbury, 1873-4, 1 vol.; Concord, 1874-5; Dover, Great Falls and Rochester, 1874; Beverly, Peabody and Marblehead, 1875.

FEARING, A. G., of Boston. Programmes, etc., of the Bunker Hill Monument Association, June 17, 1875.

FOLGER, W. C., of Nantucket. Miscellaneous Town Reports, 10.

GATES, GEO. S., Groton. Catalogue of the Groton Public Library.

GREEN, S. A., Boston. Miscellaneous pamphlets, 21.

HARTMAN, J. F., of Philadelphia, Penn. Pennsylvania Archives, Second Series, Vol. I, 1874.

KIMBALL, JAMES. Cape Ann Advertiser, May to July. Proceedings of the Mass. Council of Deliberation held in Boston, June 30, 1874. Svo pamph.

MUNSELL, JOEL, Albany, N. Y. Miscellaneous pamphlets, 31.

PUTNAM, F. W. Geological Survey of Missouri, by G. Broadhead. Vol. I, 1873-4.
VALENTINE, Mrs. Friend's Review. 1859 to 1874. Miscellaneous pamphlets, 25.

By Exchange.

BOSTON SOCIETY OF NATURAL HISTORY. Proceedings. Vol. XVII. Dec., 1874, Feb. 1875.

NEW YORK CHAMBER OF COMMERCE. Annual Report, 1874-75.

N. E. HISTORIC-GENEALOGICAL SOCIETY. Register. July, 1875.

N. Y. GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Record. July, 1875.

PHILA. ACADEMY OF NATURAL SCIENCES. Proceedings. Jan. to Apr., 1875.

YALE COLLEGE. Obituary Record of Graduates. 1875. Yale College in 1875.

PUBLISHERS. American Journal of Science. Beetle and Wedge. Boston Daily Globe. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Post. Salem Gazette. Salem Observer. Salem Register. Turner's Public Spirit.

George W. Cressy and Dorcas C. Nourse of Salem were elected resident members.



REGULAR MEETING, MONDAY, SEPT. 6, 1875.

Meeting this evening. The PRESIDENT in the chair.
Records read.

The SECRETARY announced the following correspondence :—

From American Numis. and Archæol. Soc., Aug. 10; Bureau of Education, Washington, Aug. 26; Bristol Naturalists' Soc., Aug. 12; C. H. Dall, Boston, Aug. 7; London Soc. of Antiquaries, Aug. 4; Lisbon Royal Acad. Sci., July 30; Salem Young Men's Union, Aug. 16; W. Hudson Stephens, Lowville, Aug. 26; W. Wheeler, West Roxbury, Aug. 16.

The following additions to the library were reported :—

By Donation.

BAKER, C. H., Annapolis, Md. Papers and Proceedings of the U. S. Naval Institute. Vol. I. 1874.

BUTLER, B. F. Message and Documents, 1874-75. Abridgement. 1 vol.

CONANT, W. P., West Newbury. Missionary Magazine, 1807. Locomotion by A. Gordan. Georgia Claims.

COX, E. T., Indianapolis, Ind. Geological Survey of Indiana, 1874.

CROWELL, E. P., of Amherst. Triennial Catalogue of Amherst College, 1875.

GARFIELD, E. I., Detroit, Mich. Report of the Controller of Detroit, year ending Jan. 31, 1875.

LEE, JOHN C. Commercial Bulletin, July and August, 1875.

MARSH, O. C., New Haven, Conn. Statement of affairs at Red Cloud Agency, made to the President of the U. S.

MERRITT, L. F. Essex County Mercury, April to August, 1875.

OLIVER, H. K. Report of the Connecticut Board of Education, 1873. School Report of Michigan, 1872. Penn. Report of the Institute of Mines, 1870. Report of the Department of Agriculture, 1863. Report on American Fisheries. Smithsonian Report, 1862. Transactions Mass. Agricultural Society, 3 vols. Agriculture of Mass., ten years. U. S. Coast Survey, 1832. Worcester's Gazetteer, 2 vols. Memoir of Ebenezer Bailey. Memoir of Solomon Willard. Mass. State Board of Charities, 1867, 1870-1, 1873-4. Registration Report, 1873. Auditor's Report, 1864. Report of the State Board of Health, 1871. Agriculture of Maine, 1865, 1866, 1867. The Art of Singing, 2 vols. National Lyric, 1 vol. Miscellaneous pamphlets, 64.

PATCH, GEO. W., Marblehead. Registration Reports, 1858 to 1872, 15 vols. Board of State Charities, 1865 to 1873, 7 vols. Report of the State Board of Health, 1870 to 1874, 4 vols. Journal of the Mass. House of Reps., 1865, 1866, 2 vols. Census of Boston, 1845. Industry of Mass., 1865. Census of Mass., 1860, 1865, 2 vols. 8vo. Report of Mass. Board of Education, 1859 to 1872, 14 vols. Animal Magnetism, 1 vol. The Psalmist, 1 vol. Railroad Returns, 1863 to 1872, 10 vols. Journal of the Mass. Convention, 1853, 1 vol. Patent Office Reports, 1853, 1855, 1856, 1860, 1861, 5 vols. Report on Ship Canal, 1864, 1 vol. Logic and Utility of Mathematics, 1 vol. Reeves' Bible History, 1 vol. Vocal Culture, 1 vol. Polyglott Bible, 1 vol. New Testament, 1 vol. Vindication of the Government of N. E. Churches, 1 vol. Sacred Lyre, 1 vol. Bible News, 1 vol. Manual of the General Court, 1856 to 1873. Miscellaneous pamphlets, 850.

QUINT, A. H., New Bedford. Minutes of the General Association of Mass., 1875.

U. S. PATENT OFFICE. Official Gazette, June 15, 22, July 6, 13, 20, 27, Aug. 3, 10.

By Exchange.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Memoirs, No. I. ARCHIV DER ANTHROPOLOGIE, Paris. Band VIII. Apr., 1875.

BRISTOL NATURALISTS' SOCIETY. Proceedings. New Series, Vol. I, pt. II, 1874-5.

CROSSE ET FISCHER. Journal de Conchyliologie. 3e Série, Tome xv. No. 2, 1875.

INSTITUT HISTORIQUE, Paris. L'Investigateur. Mars-Avril, 1875.

NATURWISSENSCHAFTLICHEN GESELLSCHAFT "ISIS" DRESDEN. Sitzungs-Berichte, Jahrg. 1874, Oct., Dec.

NATURWISSENSCHAFTLICHEN VEREINE ZU BREMEN. Abhandlungen, Bd. IV, Heft 2, 3. 1874-5. 8vo. Beilage, No. IV, 1874. 4to.

N. Y. LYCEUM OF NATURAL HISTORY. Annals. Vol. xi. Nos. 5-6. 1875.

ROYAL SOCIETY OF TASMANIA. Monthly Notices for 1873.

SOCIÉTÉ D'ACCLIMATATION, Paris. Bulletin Mensuel, 3me Série. Tome II, No. II, 1875.

SOCIÉTÉ D'AGRICULTURE, SCIENCES ET ARTS DE LA SARTHE, LE MANS, France. Bulletins. Tome xxiii, 1875.

SOCIÉTÉ D'ANTHROPOLOGIE, Paris. Bulletins, Tome ix, 2e Serie. Juin-Juillet, 1874. Tome x, 2e Series. Jan-Mars, 1875.

WESTERN RESERVE AND NORTHERN OHIO HISTORICAL SOCIETY. Cleveland Directories, 1845 to 1871. Miscellaneous pamphlets, 6.

PUBLISHERS. American Journal of Science. American Naturalist. Beetle and Wedge. Boston Daily Globe. Bradford New Era. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill

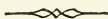
Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Gazette. Salem Observer. Salem Post. Salem Register. The Western. Turner's Public Spirit.



REGULAR MEETING, MONDAY, SEPTEMBER 20, 1875.

MEETING this evening. Vice President F. W. PUTNAM in the chair. Records read.

Ellen B. Kelman was elected a resident member. William De Roux of Panama, and Charles P. Perkins, U. S. N., Annapolis, Md., were elected corresponding members.



ADJOURNMENT OF QUARTERLY MEETING, MONDAY, OCTOBER 4, 1875.

THE adjournment of the August Quarterly Meeting was held this evening. Vice President F. W. PUTNAM in the chair.

On the motion of Rev. E. C. BOLLES the Constitution and By-laws proposed at the Quarterly Meeting in February, and at the Annual Meeting in May, were adopted after a discussion by Messrs. A. H. Johnson, D. B. Hagar, E. C. Bolles, John Robinson, W. D. Northend and C. H. Higbee.

Adjourned to meet on Monday, Oct. 11, at 7.30 P. M.

The REGULAR MEETING was held immediately after the adjournment of the Quarterly. Records read; and the correspondence was announced by the Secretary:

From Belfast Naturalists' Field Club, Sept. 6; Charles Cadman, Detroit, Mich., Sept. 2; S. A. Drake, Boston, Sept. 22; J. W. Hawes, New York, Sept. 6; J. C.

Holmes, Detroit, Mich., Sept. 24; O. A. Jenison, Lansing, Mich., Sept. 6; Rufus King, New York, Sept. 23; G. W. Patch, Marblehead, Sept. 8; W. Hudson Stephens, Grand Rapids, Mich., Sept. 23; Charles A. Walker, Chelsea, Sept. 16; Western Reserve Historical Society, Sept. 14, 17; W. Wheeler, West Roxbury, Sept. 7; W. C. Wood, Wenham, Sept. 22.

The LIBRARIAN reported the following additions to the Library:—

By Donation.

AIKIN, EDWARD, East Saginaw, Mich. East Saginaw and Saginaw City Directories, 1868-9, 1870-1.

CITY OF SALEM. Centennial Exercises, Feb. 26, 1875.

KIMBALL, JAMES. Cape Ann Advertiser, July, Aug., Sept.

PUTNAM, F. W. N. Y. Tribune, July to Sept.

RANTOUL, HANNAH, of Beverly, Mass. Memoires de Sully, 3 vols., 12mo. L'Observation, 2 vols. Fordyce's Addresses, 1 vol. Hebrew Grammar, 1 vol. Apocryphal Testament, 1 vol. Modern Materialism, 1 vol. Religious Creed and Statements, 1 vol. Conn. Evangelical Mag., 1 vol. Historie des Revolutions Romaines, 4 vols. Bielky's Evidences, 1 vol. Moscow, 1 vol. Miscellaneous pamphlets, 107.

SPENCE, F. A. Annual Report of the President of Brown University, July 17, 1875. 8vo.

U. S. PATENT OFFICE. Official Gazette, Aug. 17, 31, 1875.

By Exchange.

BOSTON SOCIETY OF NATURAL HISTORY. Proceedings. Vol. xvii, pt. iv, Feb., April, 1875. 8vo.

PUBLISHERS. American Naturalist. Beetle and Wedge. Boston Daily Globe. Gloucester Telegraph. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Gazette. Salem Post. Salem Observer. Salem Register.

BY ADDITION. Documents, U. S. Cong., 1st Sess., 30 Cong., 4 vols.; 1st Sess., 32 Cong., 13 vols.; 2nd Sess., 32 Cong., 8 vols.; 1st Sess., 33 Cong., 5 vols. Directories, Concord, 1870; Cambridge, 1868; Lowell, 1870; Bangor, 1871-2; Nashua, 1868-9; Dover and Great Falls, 1869; Somerville, Arlington and Belmont, 1869-70; Haverhill and Bradford, 1869-70, 1872, 2 vols.; Rockland, Belfast, Camden and Thomaston, 1868; Metropolitan Business Directory, 1869, 1870, 2 vols; Waltham and Watertown, 1869-70.

Mr. AUGUSTUS S. BROWN presented a bud of the banana plant from St. Augustine, Florida.

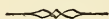
Mr. JOHN ROBINSON gave a description of the plant, illustrating his remarks with the bud presented and with a stalk and leaf from his greenhouse, and by diagrams on the blackboard.

Prof. E. S. MORSE spoke of his recent researches at

Grand Menan, and described some points in the embryology of several species of birds.

Mr. JAMES KIMBALL presented from Capt. J. J. Coker a specimen of *Hippocampus* sp., which formed the subject of remarks by the chairman.

Eva M. Davis of Salem was elected a resident member.



ADJOURNED QUARTERLY MEETING, MONDAY,
OCTOBER 11, 1875.

MEETING this evening at 7.30 o'clock. Vice President PUTNAM in the chair.

On motion of Mr. JOHN ROBINSON :

Voted, To proceed to the election of officers and that a committee be appointed by the chair to nominate a list.

Messrs. W. P. Upham, E. S. Atwood and John Robinson were appointed as the committee.

The following list was reported and the persons named were elected :

President: Henry Wheatland.

Vice Presidents: Abner C. Goodell, Jr., Frederick W. Putnam, William Sutton, Daniel B. Hagar.

Secretary: George M. Whipple.

Treasurer: Henry M. Brooks.

Auditor: Richard C. Manning.

Librarian: William P. Upham.

Curators: History, James Kimball; Manuscripts, William P. Upham; Archæology, Frederick W. Putnam; Numismatics, Matthew A. Stickney; Geology, Alpheus

S. Packard, Jr.; Botany, John Robinson; Zoology, E. S. Morse; Horticulture, Caleb Cooke; Music, Charles H. Higbee; Painting and Sculpture, Thomas F. Hunt; Technology, Edwin C. Bolles.

Committees: Finance, John C. Lee, James Upton, James B. Curwen, James O. Safford; Library, Joseph G. Waters, Henry F. King, George F. Flint, Amos H. Johnson; Publication, Abner C. Goodell, Jr.; Edward S. Atwood, William P. Upham; Lectures, Charles H. Higbee, Edwin C. Bolles, William D. Northend; Field Meeting, George M. Whipple, Allen W. Dodge, James R. Nichols, George D. Phippen, Francis H. Appleton, Amos Noyes, Francis H. Johnson, Amos H. Johnson, George Perkins.

Rev. Charles Arey of Salem, was elected a resident member.

Mr. JOHN ROBINSON presented the following

ADDENDA TO THE FERNS OF ESSEX COUNTY.

(Bulletin E. I., Vol. VII, No. 3, March, 1875.)

10 A. WOODWARDIA ANGUSTIFOLIA Smith.

Dr. Charles Pickering informs me that Mr. Wm. Oakes, in a letter written some forty years ago, speaks of finding this species while botanizing. The locality, Dr. Pickering was quite certain, was in Essex Co., probably at Danvers.

25 A. PHEGopteris HEXAGONOPTERA Fée.

Fine specimens of this species were found by Mrs. Horner at Georgetown, Sept., 1875 (see herb. Essex Co. at P. A. S.).

Thus two species are added to the County ferns from the list in the first paper indicating possible inhabitants.

Among the possible inhabitants see No. 5, *B. simplex*, from Long Island, N. Y. This will probably prove to be a mistake, and should be No. 6, *B. matricariæfolium*.

Mr. Frank Lufkin of Rockport has sent me *LYCOPOR-*

DIUM CLAVATUM, L. ANNOTINUM and L. LUCIDULUM from that town, species not common in the County, and not *reported* previously from that quarter.⁵

I have found EUISETUM HYEMALE at Methuen and Boxford during the past season.

While dredging for animals and plants in Wenham, Pleasant and Chebacco ponds, during July and August, 1875, I collected among the Cryptogamous plants the following :

ISOETES ECHINOSPORA Durieu var. BRAUNII. In shallow water at Pleasant pond. (The first species of Isoetes yet *reported* in the County; doubtless others are to be found.

Characeæ (2 gen., 6 species) (named by Mr. C. C. Frost, of Brattleboro, Vt.).

CHARA CORONATA var. SCHWEINITZII. Wenham pond, abundant.

CHARA GYMNOPUS var. ELEGANS A. Br. Pleasant pond, Wenham, "new to New England."

CHARA VULGARIS L. (C. fœtida of authors). Pleasant pond, Wenham, common.

NITELLA GRACILIS Agh. Chebacco pond, abundant.

NITELLA FLEXILIS Agh. Wenham pond.

—————? "Unknown to me, perhaps new to this region."

C. C. Frost.

Any local county lists or notes on the plants of the county will be gladly received.

Capt. SAUNDERS, of Orlando, Me., presented to the Institute a vampire, several snakes, and a very curious bone belonging to the dorsal fin of a fish, which were remarked upon by the chairman.

⁵ Since the above was communicated, and just as this goes to press (May, 1876), I also found these species in Beverly.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., NOV. AND DEC., 1875. Nos. 11 & 12.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, OCTOBER 18, 1875.

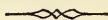
MEETING this evening. Vice President F. W. PUTNAM in the chair. Records read.

Dr. GEORGE A. PERKINS exhibited some curious specimens of coal and charcoal; also beautiful impressions of ferns in coal and stone, and made some remarks on the subject. The chairman continued the subject, and spoke on coal deposits in this country, and of the fossil remains of fish found in several carboniferous deposits.

Mr. WILLIAM P. UPHAM read an interesting paper relating to the settlement of Rev. Samuel Skelton, minister of the First Church in Salem. He also called attention to the value of old letters and papers, and the importance of their preservation. The paper was referred to the publication committee for insertion in the "Historical Collections."

Mr. KIMBALL exhibited plaster casts of two very curious utensils supposed to have been made by the Indians and described the way in which they were probably made and the conditions under which the original specimens had been found. One was supposed to be a part of a large mortar and the other a cooking vessel. The chairman made some statements of his researches among Indian relics, explanatory of the casts on exhibition.

Mr. C. H. HIGBEE laid on the table for examination some specimens of minerals which he had collected, and gave a brief description of them. This led to a discussion of the minerals of this county, particularly of those found in the region of Newbury, and which have recently excited great interest, Messrs. Higbee, Kimball, Putnam and others taking part.



REGULAR MEETING, MONDAY, NOVEMBER 1, 1875.

MEETING this evening. Vice President F. W. PUTNAM in the chair. Records of last meeting read.

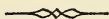
The SECRETARY announced the following correspondence:—

From Francis H. Appleton, Boston, Oct. 19; Charles Arey, Salem, Oct. 19; Helen F. Ayres, Boston, Oct. 19; S. L. Boardman, Augusta, Me., Oct. 5; E. P. Boon, New York, Oct. 26; John J. Bagley, Detroit, Mich., Oct. 17; Fidelia Bridges, Brooklyn, N. Y., Oct. 18; James B. Curwen, Salem, Oct. 13; J. Edmonds Clarke, Washington, D. C., Oct. 28; Samuel A. Drake, Boston, Oct. 5, 7; John Ward Dean, Boston, Oct. 5; J. P. Felton, Salem, Oct. 27; S. A. Green, Boston, Oct. 13; F. B. Hough, Washington, Oct. 2; Rufus King, New York, Oct. 16; H. M. Knowlton, Boston, Oct. ; Lynn Public Library, Oct. 29; I. P. Langworthy, Boston, Oct. 9; Michigan State Library, Oct. 9; Michigan State Geological Survey, Oct. 27; Amos Noyes, Newburyport, Oct. 16; George Peabody, Salem, Oct. 30; Richard A. Proctor, Boston, Oct. 21; E. P. Robinson, Saugus, Oct. 6, 11; W. Hudson Stephens, Lowville, N. Y., Oct. 13; Smithsonian Institution, Oct. 12; Joseph G. Waters, Salem, Oct. 13; Justin Winsor, Boston, Oct. 15.

Prof. A. GRAHAM BELL gave a very interesting lecture on the system of "visible speech" invented by his father, illustrated by charts of the symbols representing the various sounds, and by practical examples of the value of the system in teaching deaf mutes to speak, as tested by the ability of a young pupil from the Boston Institution to interpret the symbols at sight. The exposition of the value of the system, both in its linguistic and educational aspects, was listened to with intense interest, and the tests were eminently satisfactory.

After the close of the lecture a conversation followed between Rev. E. B. Willson, the lecturer, and others, in which several questions were proposed and answered. A vote of thanks was then passed to Mr. Bell for the evening's instruction.

Edward J. Johnson of Nahant was elected a resident member.



THE SECOND ART EXHIBITION

OPENED on Tuesday, Nov. 9, at the rooms of the Institute, Plummer Hall, and closed Wednesday the 17th. About twelve hundred persons visited the exhibition, not including members of the Institute and contributors. The main hall was devoted to the display of oil paintings, water colors, pen and ink and pencil sketches. The collection of portraits of persons prominent in Salem history attracted much attention, and among them were represented the productions of Copley, Stuart, Frothingham, Osgood, Alexander and others of our early artists. Our local artists presented many choice specimens, enumerated in the accompanying catalogue of two hundred

and eighty-three pictures by one hundred and eighty-six contributors.

The eastern ante-room was occupied by the exhibition of bronzes, porcelain and pottery ; one hundred and five specimens from forty-seven contributors. This was the first ceramic exhibition in Salem, and it was an entire success, and many rich and curious articles were there displayed.

CATALOGUE OF THE SECOND ART EXHIBITION, NOVEMBER, 1875.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
1	James Miller.	C. Osgood.	Mrs. J. F. Miller.
2	Timothy Pickering.	S. L. Waldo.	J. Pickering.
3	John Pickering.	Chester Harding.	J. Pickering.
4	Richard Derby.	Sargent.	Misses Derby.
5	Thomas Cole.	C. Osgood.	Mrs. T. Cole.
6	Leverett Saltonstall.	C. Harding.	Mrs. J. F. Tuckerman.
7	Wm. Orne.		Essex Institute.
8	Jona. Webb.	Frothingham.	Gardner Barton.
9	Mrs. Edward Lander.	"	Misses Lander.
10	Edward Lander.	"	Misses Lander.
11	C. W. Upham.		Essex Institute.
12	William Bentley.		Essex Institute.
13	Zachariah Hicks.	Stuart.	Mrs. S. B. Howe.
14	B. Lynde Oliver.	Copy by Miss Gilbert.	J. G. Waters.
15	C. W. Upham.	Alexander.	Mrs. C. W. Upham.
16	A. Huntington.	B. C. Porter.	Mrs. A. Huntington.
17	Mrs. Lois Paine.		Mrs. J. S. Cabot.
18	Sir Richard Saltonstall.	Copy from Rembrandt, by C. Osgood.	Misses Saltonstall.
19	Pickering Dodge.	Frothingham.	W. A. Lander.
20	Penn Townsend.		J. G. Waters.
21	Mrs. Samuel Cook.		H. K. Oliver, Jr.
22	Nathaniel Lord.		G. R. Lord.
23	Alpheus Crosby.	E. Billings.	D. B. Hagar.
24	Nathaniel Hawthorne.		Mrs. G. B. Loring.
25	Wm. H. Prescott.	J. H. Young.	D. B. Hagar.
26	Nathaniel J. Lord.		George R. Lord.
27	Samuel Cook.		H. K. Oliver, Jr.
28	Family of Benjamin West.		Mrs. J. S. Cabot.
29	Rebecca Cabot, daughter of Timothy Orne.		Mrs. J. S. Cabot.
30	Benj. Waters, about 1800.		J. G. Waters.
31	View on the Presumpscot.	H. B. Brown.	E. C. Bolles.
32	Crayon Head.	Pupil of Miss Merrill.	S. H. Worcester.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
33	View in Stowe, Vt.	G. M. White.	N. G. Simonds.
34	Water Color.	J. W. Thyng.	J. W. Thyng.
35	Drawing "The Page."	G. B. Haskell.	G. B. Haskell.
36	Flowers, French crayon.	Miss H. Putnam.	Miss H. Putnam.
37	Pencil drawing.	G. B. Haskell.	C. F. Archer.
38	Charcoal head.	Miss Ida Caller.	J. M. Caller.
39	Pen sketch.	O. W. H. Upham.	O. W. H. Upham.
40	Water color.	David Roberts, England.	Misses Saltonstall.
41	Out door sketch.	O. W. H. Upham.	O. W. H. Upham.
42	Lespieglerie.	G. M. White.	G. M. White.
43	Sketch at Seabrook.	Miss M. C. Allen.	Miss Allen.
44	La Mignonne.	G. M. White.	G. M. White.
45	Charcoal. Fancy head.	Miss Ida Caller.	J. M. Caller.
46	Copy of an old picture.	Miss H. F. Car- lton.	Oliver Carlton.
47	Charcoal. Fancy head.	Miss Ida Caller.	J. M. Caller.
48	Monarch of the Glen.	G. Southward.	Observatory Club.
49	Drawing.	J. B. Hudson, Jr.	J. B. Hudson, Jr.
50	Beatrice Cenci.	After Guido.	Wm. A. Lander.
51	St. Francis, founder of the Fran- ciscan Order.	Ribera.	Mrs. A. L. Peirson.
52	Water-Lilies.	Seavey.	G. W. Benson.
53	Pansies.	Seavey.	G. W. Benson.
54	Road-side View.	J. B. Hudson, Jr.	J. B. Hudson, Jr.
55	Flowering Vines.	Miss E. Gardner.	Miss E. Gardner.
56	Old Canal.	J. B. Hudson, Jr.	J. B. Hudson, Jr.,
57	Woodcock.	Mrs. G. P. Osgood.	Mr. G. P. Osgood.
58	Water color.	Sattler.	John C. Lee.
59	Woodcock.	Mrs. G. P. Osgood.	Geo. P. Osgood.
60	Palette Knife Sketch.	H. M. Knowlton.	H. M. Knowlton.
61	Grief.	H. M. Knowlton.	Miss Knowlton.
62	Head of a Boy.	H. M. Knowlton.	Miss Knowlton.
63	Apple Peddler.	Pupil of Miss Knowlton.	Miss Knowlton.
64	The Exile.	H. M. Knowlton.	Miss Knowlton.
65	Portrait of Lady.	H. M. Knowlton.	Miss Knowlton.
66	Wisteria.	Miss S. E. Smith.	Miss Smith.
67	Portrait, Miss Manning.	Miss S. E. Smith.	Miss S. E. Smith.
68	Interior of a Studio.	Pupil of Miss Knowlton.	Miss Knowlton.
69	Apple Blossoms.	H. M. Knowlton.	Miss Knowlton.
70	Apple Tree at Manchester.	H. M. Knowlton.	Miss Knowlton.
71	Priscilla, (after Hunt).	Miss Smith.	Miss Smith.
72	Wayside Flowers.	Miss Smith.	Miss Smith.
73	Study.	Pupil of Miss S. E. Smith.	Miss Smith.
74	The Willows.	Miss S. E. Smith.	Miss Smith.
75	Sketch.	Wm. M. Hunt.	Mr. Hunt.
76	Medford Spires.	"	Mr. Hunt.
77	Cactus.	H. M. Knowlton.	Miss Knowlton.
78	June Day.	After Rousseau.	Miss S. E. Smith.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
79	Study, charcoal.	Pupil of Miss Smith.	Miss S. E. Smith.
80	Study, charcoal.	Pupil of Miss Smith.	Miss S. E. Smith.
81	Study, charcoal.	"	Miss Smith.
82	Study, charcoal.	Miss H. M. Knowlton.	Miss Knowlton.
83	Sketch, charcoal.	Wm. M. Hunt.	Mr. Hunt.
84	Study, moonlight.	Miss H. M. Knowlton.	Miss Knowlton.
85	Study, from life.	Miss S. E. Smith.	Miss Smith.
86	Study, Azalia.	Pupil of "	Miss Smith.
87	Apple Blossoms.	Miss S. E. Smith.	Miss Smith.
88	Ginger Jar.	Pupil "	Miss Smith.
89	Planting.	Miss S. E. Smith.	Miss Smith.
90	Wild Flowers.	Pupil "	Miss Smith.
91	Portrait, Josh Billings.	Miss H. M. Knowlton.	Miss Knowlton.
92	Study.	Pupil of Miss Smith.	Miss Smith.
93	Wisteria.	"	Miss Smith.
94	Tea Roses.	Miss S. E. Smith.	Miss Smith.
95	Descent from the Cross.	(After Overbeck).	C. A. Ropes.
96	Madonna.	Copy from Raphael.	B. H. Silsbee.
97	Pond Lilies.	Mary H. Weston.	Miss Weston.
98	Saco River, N. Conway.	Geo. Newcomb.	Mr. Newcomb.
99	Cardinal Flower.	Nina Moore.	Mrs. K. Woods.
100	Water Color.		Miss Saltonstall.
101	Water Color.	Sattler.	J. C. Lee.
102	Water Color.		Miss Saltonstall.
103	Presumpscot Falls.	J. B. Hudson, Jr.	Mr. Hudson.
104	Moonlight.	R. D. Wilkie.	C. H. Higbee.
105	Dogs Heads.	Miss Nellie Haddock.	Miss Haddock.
106	Portrait, Mrs. Fitch.	Copley.	Misses Derby.
107	Pen Drawing.	Geo. M. White.	H. M. Brooks.
108	After the Storm.	Oliver.	C. A. Ropes.
109	Wild Flowers.	Mary H. Weston.	Miss Weston.
110	Baboosic Lake.	Mrs. F. Cox.	Mrs. Cox.
111	Wild Flowers.	Mary H. Weston.	Miss Weston.
112	The Showery Day.	Mrs. F. Cox.	Mrs. Cox.
113	Woodcock.	W. B. Parker.	Mr. Parker.
114	White Cactus.	Miss Kate Johnson.	Miss Johnson.
115	Night Blooming Cereus.	"	Miss Johnson.
116	View on Lake George.	Fisher.	H. M. Brooks.
117	The Horse Fair.	Unknown.	Mrs. T. Hunt.
118	The Horse Fair.	"	Mrs. T. Hunt.
119	Marine View.	Ernest Fenollosa.	Mr. Fenollosa.
120	Pen Drawing.	Geo. M. White.	H. M. Brooks.
121	Pen Drawing.	"	H. M. Brooks.
122	Water Color.	Chinery.	T. F. Hunt.
123	Flower Piece.	Miss K. Johnson.	Miss Johnson.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
124	The Shepherdess.	Henri.	C. A. Ropes.
125	Landscape.	M. Lajoie.	H. M. Brooks.
126	Water Color.	G. M. White.	Mr. White.
127	Water Color.	"	Mr. White.
128	Sea Mosses.	Miss M. Goldthwaite.	Miss Goldthwaite.
129	Water Color.	G. M. White.	Mr. White.
130	Water Color.		
131	Portrait.	Unknown.	Mrs. C. F. Williams.
132	Portrait, Lady.	Jean Raoux.	Miss Jackson.
133	Shop in Paris.	Lafaye.	George Peabody.
134	Diana's Baths.	Geo. Newcomb.	Mr. Newcomb.
135	Woman Selling Provisions.	After Gerhard.	George Peabody.
136	Interior.	Unknown.	Wm. A. Lander.
137	Landscape.	"	George R. Lord.
138	The Sisters.	Copy from Sir T. Lawrence.	J. P. Cook.
139	Water Color.	G. M. White.	Mr. White.
140	Water Color.		
141	The Dentist.	Mary H. Weston.	Miss Weston.
142	View near Naples.	School of Vernet.	Miss Jackson.
143	Portrait.	Mrs. M. J. David.	Mrs. E. Putnam.
144	Sunset.	J. J. Enneking.	T. F. Hunt.
145	Scriptural Subject.	Unknown.	J. M. Caller.
146	Reading Magdalen.	Mrs. H. M. Berry.	Mrs. Berry.
147	Autumn.	Mrs. A. M. Kinder.	Mrs. Kindler.
148	Deer.	Pupil of Miss Merrill.	A. E. Whitman.
149	Cloister Life.	Mary E. Williams.	Miss M. E. Williams
150	Roman Forum.	Moretti.	Miss M. E. Williams
151	Angels, after Raphael.		Miss M. E. Williams
152	Monks.	Mary E. Williams.	Miss M. E. Williams
153	St. Peter's.	Moretti.	Miss M. E. Williams
154	Roman Beggar.	Mary E. Williams.	Miss M. E. Williams
155	Study of an Arab.	"	Miss M. E. Williams
156	Heidelberg.	A. O. Williams.	Miss A. O. Williams
157	Sans Souci.	Mary E. Williams.	Miss M. E. Williams
158	Mt. Ætna.	A. O. Williams.	Miss A. O. Williams
159	Alchemist.	Mary E. Williams.	Miss M. E. Williams
160	View of Tivoli and Falls.	A. O. Williams.	Miss A. O. Williams
161	Roman Peasant Girl.	Mary E. Williams.	Miss M. E. Williams
162	Market Woman.	Unknown.	W. B. Parker.
163	Game.	Vervoort.	Essex Institute.
164	Landscape.	Böhm.	James O. Safford.
165	Twilight in Venice.	E. Cecchini.	Mrs. J. S. Cabot.
166	Head.	Mary E. Williams.	Miss M. E. Williams
167	Capture of Luther.	Van Starckenburgh.	Mrs. E. D. Kimball.
168	Fancy Head.	Miss Knight.	Miss Knight.
169	Salem Boy.	Geo. Newcomb.	C. S. Clark.
170	Iris; after Guido.	Mrs. H. M. Berry.	Mrs. Berry.
171	Mt. Shasta.	H. O. Young.	C. A. Ropes.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
172	Landscape.	J. Both.	George Peabody.
173	Water Color.	Miss Needham.	Mrs. T. Hunt.
174	Cherries.	G. M. White.	T. F. Hunt.
175	Landscape.	Wynants.	George Peabody.
176	Norwegian Scenery. After Gude.	S. P. Hodgdon.	George Peabody.
177	Woodbine.	Mrs. H. H. Davis.	Mrs. Davis.
178	Off Baker's Island.	G. M. White.	T. F. Hunt.
179	Pen Sketch.	G. M. White.	T. F. Hunt.
180	Magdalen.	Guido.	Mrs. S. B. Howe.
181	Washington.	Jos. Ames.	E. W. Upton.
182	St. Ursula.		Mrs. S. B. Howe.
183	The Wayside Trough.	A. P. Close.	J. P. Cook.
184	Head; after Miss Knowlton.	Miss Caller.	Miss Caller.
185	Osgood Fire Place.	Miss K. Brooks.	H. M. Brooks.
186	Basket of Chestnuts.	"	H. M. Brooks.
187	White Lily.	Miss L. E. Merrill.	Miss Merrill.
188	Flower Panel.	Miss Williams.	Miss Williams.
189	Wild Flowers.	Miss L. E. Merrill.	Miss Merrill.
190	Holy Family.	Unknown.	Geo. P. Osgood.
191	Fruit Piece.	Miss L. E. Merrill.	Miss Merrill.
192	Lily of the Valley.	L. L. A. Very.	Miss Very.
193	Gil Blas.	Van Lerijs.	Miss Jackson.
194	Study.	Miss A. A. Agge.	Miss Agge.
195	Study from a cast.	W. H. White.	W. H. White.
196	Crab Apples.	Miss L. E. Merrill.	Miss Merrill.
197	Ginger Jar.	Geo. Newcomb.	Mr. Newcomb.
198	Flower Piece.	Miss Emily Williams.	Miss Williams.
199	Trees on Blue River, Nebraska.	T. M. Osborne.	Mr. Osborne.
200	View in Newbury, Vt.	Miss M. S. Bullard.	Miss Bullard.
201	Blackberry Vine.	Miss L. L. A. Very.	Miss Very.
202	Flower Panel.	Miss M. E. Williams.	Miss Williams.
203	Little Red Riding Hood.	Miss L. L. A. Very.	Miss Very.
204	Apple Blossom.	Miss C. L. Grant.	Miss Grant.
205	A fresh puff off shore.	S. G. W. Benjamin.	J. A. Gillis.
206	Morning on Columbia River.	H. O. Young.	J. P. Cook.
207	Wild Flowers.	Mrs. F. Cox.	Mrs. Cox.
208	The Mountain River.	J. Warren Thyng.	Mr. Thyng
209	Wild Flowers.	Mrs. F. Cox.	Mrs. Cox.
210	Marine View.	Geo. M. White.	N. G. Simonds.
211	Gloucester Beach.	S. S. Tuckerman.	J. F. Tuckerman.
212	Study of Rocks at Nahant.	Mrs. F. Cox.	Mrs. Cox.
213	Winter Scene.		W. A. Lander.
214	Landscape.		C. H. Higbee.
215	Dogs Heads; after Landseer.	Miss S. E. Smith.	Miss Smith.
216	Portrait.	Frothingham.	Misses Forrester.
217	Portrait.	Stuart.	Misses Forrester.
218	Portrait.	Alexander.	Essex Institute.
219	Placid Lake.	S. P. Hodgdon.	E. K. Benson.
220	Interior; with Figures.	Vautier.	Mrs. Mott.
221	Summer Sunset.	Miss H. F. Osborne.	Miss Osborne.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
222	The Play Mates.		Miss H. Silsbee.
223	Winter Sunset.	Miss H. F. Os- borne.	Miss Osborne.
224	Marine View.	Geo. M. White.	H. F. Waters.
225	Spanish Peasants.	After Murillo.	Mrs. Mott.
226	Wayside Inn.		Miss Jackson.
227	White Mountain Brook.	Mrs. A. M. Kin- dler.	Mrs. Kindler.
228	Marine View.	Geo. M. White.	H. F. Waters.
229	Marblehead Neck.	Miss H. F. Os- borne.	Miss Osborne.
230	Home they brought her Warrior dead.	" "	Miss Osborne.
231	Flowers.	Miss H. M. Knowl- ton.	H. F. Waters.
232	Marine View.	Miss Caller.	Miss Caller.
233	Angel.	After Fra Angel- ico.	Mrs. F. H. Lee.
234	Angel.	After Fra Angel- ico.	Mrs. F. H. Lee.
235	Water color.		W. A. Lander.
236	Washington.	After Stuart.	Miss H. E. Deland.
237	Alexander Hamilton.	Trumbull.	Essex Institute.
238	Sunset at Sea.	S. G. W. Benja- min.	T. F. Hunt.
239	May Flower.	Miss C. L. Grant.	Miss Grant.
240	Misty Morning on the Hudson.	G. D. Brewerton.	X. H. Shaw & Son.
241	Pen Drawing; Archb. Williams.	Willis B. Young- man.	E. N. Peabody.
242	From the Cliff, Newport.	G. D. Brewerton.	X. H. Shaw & Son.
243	Water Color.	Miss E. M. Bur- rows.	M. S. Shaw.
244	Storks Tower.	Mrs. A. Hyatt.	Mrs. Hyatt.
245	Study.	Geo. M. White.	H. F. Waters.
246	Flower Piece.	Miss E. M. Bur- rows.	Miss L. Tappan.
247	Peaches.	Mrs. H. M. Berry.	Mrs. Berry.
248	Dawn off White Island.	S. G. W. Benja- min.	Mr. Benjamin.
249	Misty Morning on Lake Thun.	Mrs. A. Hyatt.	Mrs. Hyatt.
250	Artists' Brook, N. Conway.	Miss L. Lander.	Miss Lander.
251	Water Color.	Miss F. Bridges.	Miss Bridges.
252	Water Color.	" "	Miss Bridges.
253	Our Sunny Knoll.	Miss E. Gardner.	Miss Gardner.
254	Water Color.	Miss L. Lander.	Miss Lander.
255	Roman Peasant.		Misses Saltonstall.
256	Ingham Moat, Sussex.	Buckley, senior.	Misses Saltonstall.
257	Peasant Girl from the Campagna.		Misses Saltonstall.
258	Flower Piece.	Miss K. Johnson.	Miss Johnson.
259	A Quiet Nook.	Miss L. Lander.	Miss Lander.
260	Lilies.	Helen F. Ayres.	Miss Ayres.
261	Morning Glories.	Miss C. L. Grant.	Miss Grant.
262	Mill in Suabián Alps.	Mrs. A. Hyatt.	Mrs. Hyatt.
263	Whitby Abbey.	" "	Mrs. Hyatt.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
264	Water Color.	Miss E. M. Burrows.	M. S. Shaw.
265	Nobska Beach.	Mrs. A. Hyatt.	Mrs. Hyatt.
266	Birds.	Miss L. Lander.	Miss Lander.
267	Wisteria.	Miss C. L. Grant.	Miss Grant.
268	Autumn.	Miss L. Lander.	Miss Lander.
269	After School.	J. F. Lyon.	Mr. Lyon.
270	Portrait.	Miss Myra Derby.	Miss Warner.
271	Scientific Drawing.	S. E. Cassino.	Mr. Cassino.
272	James Silver.		Wm. Silver.
273	Samuel Webb.		G. Barton.
274	Water Color.	Chinery.	T. F. Hunt.
275	Joseph Mosely.		Mrs. T. B. Russell.
276	Ancient Painting.		Nicholas Pitman.
277	Autumn Leaves.	Miss Alice Callier.	Miss Callier.
278	Autumn Leaves.	" "	Miss Callier.
279	Study.	W. H. White.	Mr. White.
280	New England Scenery.	H. F. Higgins.	J. P. Cook.
281	Everlastings.	W. H. White.	Mr. White.
282	Pond Liljes.	Mrs. G. P. Osgood.	Mrs. Osgood.
283	Fancy Head.	Geo. Southward.	J. M. Callier.

CERAMICS, BRONZES, ETC.

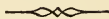
NO.	TITLE.	CONTRIBUTOR.
1	Collection of Pottery, etc.,	Tech. Dep. Essex Ins.
2	China Plate (Canton, modern),	Mrs. J. P. Cook.
3	Japanese Plate (modern),	Mrs. J. P. Cook.
4	Japanese cup and saucer (modern),	Mrs. J. P. Cook.
5	Japanese cup and saucer (modern),	Mrs. J. P. Cook.
6	Porcelain Pen Rest (Chinese),	Mrs. J. P. Cook.
7	Japanese Cup and Saucer (modern),	Mrs. J. P. Cook.
8	Jade Stone Ornament,	T. F. Hunt.
9	Japanese Plate (modern),	Mrs. J. P. Cook.
10	Cup and Saucer, hand-painted,	Mrs. Chas. S. Nichols.
11	Cup and Saucer, hand-painted,	Mrs. Chas. S. Nichols.
12	Cup and Saucer (Sevres China),	William Silver.
13	Christian Lamps and Vases from Catacombs at Rome,	Miss Mary E. Williams.
14	Models of Vases found in Pompeii,	Miss Mary E. Williams.
15	Ancient Etruscan Pottery,	Miss Mary E. Williams.
16	Ancient Lamp and Medallion,	Miss Louisa Lander.
17	Early North American Pottery,	F. W. Putnam.
18	Stone Pipe from Jagga Country, Africa,	Caleb Cook.
19	American Pottery,	Miss Louisa Lander.
20	Four examples of Beverly Pottery, decorated by Miss Kate Johnson,	J. Robinson.
21	Two examples of Beverly Pottery, decorated in India Ink by E. S. Morse,	E. S. Morse.
22	Lambeth Jug,	J. Robinson.
23	Four examples of Lancaster Pottery,	Mrs. C. S. Nichols.

NO.	TITLE.	CONTRIBUTOR.
24	Six examples of Chinese Pottery,	T. F. Hunt.
25	Japanese Pottery,	C. Cook.
26	Horse of Marly, Bronze,	J. C. Lee.
27	Bronze Leopard,	J. C. Lee.
28	Silver Bronze Vase,	J. C. Lee.
29	Bronze Leopard,	J. C. Lee.
30	Horse of Marly,	J. C. Lee.
31	Bronze Bell of St. Peter's,	J. C. Lee.
31 a	Plate, Cup and Saucer, brought from China in the Grand Turk, 1785,	
32	China Plate,	Misses Derby.
33	Cup and Saucer, Chinese (ancient),	G. R. Curwen.
34	Cup and Saucer, Chinese (ancient),	G. R. Curwen.
35	Old Nanking Custard Cup,	G. R. Curwen.
36	Tea Set, China, about 1800,	Mrs. Jos. Osgood.
37	Seven pieces of Canton Ware, about 1820,	Jona. Tucker.
37 a	Four pieces of Old China,	Miss M. Whipple.
38	Plate, Old China,	Mrs. Frost.
39	Bowl, Japan,	Mrs. J. P. Cook.
40	Plate, Old China,	Mrs. Frost.
41	Porcelain and Wicker Work, Bowl and Plate, Japan,	Mrs. T. Hunt.
42	Plate, China,	Mrs. M. A. Andrews.
43	Plate, Old China,	Mrs. Jona. Perley.
44	Cup and Saucer, Canton Ware,	Mrs. Jona. Perley.
44 a	Old Blue Tea Caddy, Cup and Saucer,	Misses Derby.
45	Saki Bottle, Japan,	Mrs. J. P. Cook.
46	Tea Pot, Japan,	Mrs. J. P. Cook.
47	Dragon Vase, China,	Mrs. J. P. Cook.
48	Porcelain Pagoda,	Mrs. T. Hunt.
49	Pair of Crackle Vases,	H. F. Waters.
50	Porcelain Ornaments,	Mrs. T. Hunt.
51	Dragon Vase,	Mrs. T. Hunt.
52	Porcelain Vase,	Mrs. J. P. Cook.
53	Cream Jug, Old China Ware,	Mrs. J. P. Cook.
54	Old Nanking Tea Pot,	Mrs. J. P. Cook.
55	Japanese Lacquer Porcelain Tea Pot,	Mrs. J. P. Cook.
56	Plate, formerly property of Royal Family, France,	Miss J. F. Bond.
57	Old French Ware, 1676,	Jona. Tucker.
58	Old Pencil Ware, four pieces,	Jona. Tucker.
59	Two Old Tiles,	Mrs. T. B. Russell.
60	Cream Jug, Old English Ware,	B. D. Hill.
61	Bowl,	B. D. Hill.
62	Old English Ware,	Mrs. T. B. Russell.
63	Bowl,	G. P. Daniels.
64	Coffee Pot, 1775,	G. P. Daniels.
65	Coffee Pot, China, 1803,	Mrs. E. Emmerton.
66	Pencil Ware, Cup and Saucer,	Miss E. H. Kimball.
67	Liverpool Ware, plate,	G. R. Curwen.
68	Pitcher, taken by a Privateer, 1812,	Mrs. M. A. Tufts.
69	Chelsea Ware,	Miss J. F. Bond.
70	Sugar Bowl, Gen. James Miller's Wedding Set,	Mrs. C. H. Higbee.
71	Dutch Porcelain Mug,	Miss L. Lander.
72	Old English Ware Gravy Dish,	Miss L. Lander.

NO.	TITLE.	CONTRIBUTOR.
73	Sugar Bowl, Wedgwood Ware, Flaxman's designs,	Miss L. Lander.
74	Louis 14th Mug and Saucer,	Miss L. Lander.
75	Old Indian Mug and Saucer,	Miss L. Lander.
76	Independence Ware Plate,	E. L. Perley.
77	Vase, French,	Mrs. C. H. Higbee.
78	Masonic Wine Glass,	Jona. Perley.
79	Glass Ware,	Mrs. G. M. Whipple.
80	Japanese Crystal,	Mrs. T. Hunt.
81	Glass Bottle, 1767,	Jas. Kimball.
82	Glasses used by Gen. Miller in war of 1812,	Miss M. E. Miller.
83	Hour Glass Bottle,	Miss E. H. Kimball.
84	Old English Glass,	G. R. Curwen.
85	Old Beer Jug, English,	B. D. Hill.
86	Native Majolica, Boston, Nov. 9, 1872,	J. Robinson.
87	Puzzle Pitcher,	Jas. Kimball.
88	Beer Mug,	Jas. Kimball.
89	German Vase,	Jas. Kimball.
90	Bowl and Pitcher,	Miss A. Grant.
91	Collection of Coins of all Nations, from the earliest times to the present, showing the progress of the art of coinage, arranged and contributed by	J. Robinson.
92	Modern copy Burnt China,	H. F. Waters.
93	Old Burnt China,	H. F. Waters.
94	Old Burnt China,	H. F. Waters.
95	Delft,	H. F. Waters.
96	Old China,	H. F. Waters.
97	Old China,	H. F. Waters.
98	Delft,	H. F. Waters.
99	Japanese Teapot,	H. F. Waters.
100	Rouen Jar,	H. F. Waters.
101	Japanese Saucer,	H. F. Waters.
102	Burnt China Cup and Saucer,	H. F. Waters.
103	Silver Watch 150 years old,	Miss Mary E. Williams.
104	Silver Bell, figure of Silenus,	H. F. Waters.
105	Two watches 150 years old,	H. F. Waters.
106	Old China Cup and Saucer,	H. F. Waters.
107	Rouen Jar,	H. F. Waters.
108	Chinese Teapot,	Mrs. T. Hunt.
109	Old Cake Dish,	H. F. Waters.
110	Very old China Bowl,	H. F. Waters.
111	Blue China Dish,	H. F. Waters.
112	Elder Brewster Teapot,	H. F. Waters.
113	Old China Coffee Cup and Saucer,	H. F. Waters.
114	Old China Soup Plate,	H. F. Waters.
115	Specimen of Rogers Ware, English,	H. F. Waters.
116	Old China Tea Caddy and Stand,	H. F. Waters.
117	Delft Plate,	H. F. Waters.
118	Old China Tea Pot,	H. F. Waters.
119	Blue China Dish,	H. F. Waters.
120	Old China Bowl,	H. F. Waters.
121	Decorated China,	H. F. Waters.
122	Twenty-eight pieces of Glass Ware, of English, German and Venetian make,	H. F. Waters.

NO.	TITLE.	CONTRIBUTOR.
123	Painting on Copper, silver frame,	Miss Mary E. Williams.
124	Door Plates,	Miss Kate Johnson.
125	Whist Counters,	
126	Wedgwood Portrait Sir W. J. Hooker,	J. Robinson.
127	Portrait in Wax,	Mrs. E. G. Perkins.
128	Highland Mary Snuff Box,	Miss E. H. Kimball.
129	Collection of Miniatures,	
130	Painted Table Top,	Mrs. E. T. Kemble.
131	Bronze Medallion of Gibson, the Sculptor,	Miss Louisa Lander.
132	Collection of Manuscripts,	Manuscript Department, Essex Institute.
133	Collection of Ceramics,	Dep't of Technology, Es- sex Institute.
134	Bronze Figure.	Mrs. T. Hunt.
135	Bronze Group of Dogs,	J. C. Lee.
136	Bronze figure.	Mrs. T. Hunt.
137	Pair of Bronze Vases,	Mrs. T. Hunt.
138	Pair of Bronze Vases,	J. Robinson.
139	Sesostris.	J. Robinson.
140	Metallization of Plaster from "The Cluny,"	Mrs. C. S. Nichols.
141	Esculapius.	J. C. Lee.
142	Japanese Platter,	H. F. Waters.
143	Jupiter,	J. C. Lee.
144	Figure Metallization of Plaster from "The Cluny,"	Mrs. C. S. Nichols.
145	St. George and the Dragon,	A. H. Johnson.
146	Bronze Vases, Japanese,	J. P. Cook.
147	Pair of Carved Wood Stands, Chinese,	Mrs. T. Hunt.
148	Very old Chinese Bronze Vase,	A. S. Packard, Jr.
149	Bronze Figure (Horse),	J. C. Lee.
150	Damascus Metal Bowls,	Misses Forrester.
151	The Dying Gladiator,	Miss Saltonstall.
152	Bronze Vases, Japanese,	J. P. Cook.
153	Porcelain Vases, Chinese,	Mrs. T. Hunt.
154	Old Bronze Incense Burner, Chinese,	J. P. Cook.
155	Japanese Bronze,	J. P. Cook.
156	Incense Burner, Chinese,	Mrs. J. Osgood.
157	Pair of Gilded Vases, Chinese,	Mrs. J. P. Cook.
158	Pair of Japanese Vases,	Mrs. T. Hunt.
159	Pair of Bronze Incense Burners, Chinese,	Mrs. J. P. Cook.
160	Pair of Chinese Vases,	Mrs. J. P. Cook.
161	Old China Vase (about 1,400),	Mrs. T. Hunt.
162	Pair of Japanese Vases,	Mrs. T. Hunt.
163	Pair of Bronze Candlesticks, Japanese,	Mrs. J. P. Cook.
164	Pair of Bronze Ornaments, Chinese,	Mrs. J. P. Cook.
165	Pair of Bronze Vases, Chinese,	Mrs. J. P. Cook.
166	Japanese Stork Candlesticks,	Mrs. J. P. Cook.
167	Bronze Image Worshipped by the Chinese,	J. P. Cook.
168	Chinese Gong Bronze,	J. P. Cook.
169	Pair of Japanese Vases,	J. Robinson.
170	Pair of Candlesticks used in South Church, 1804,	J. Robinson.
171	Chinese Porcelain Jar,	J. Robinson.
172	Pair of Japanese Vases,	J. Robinson.
173	Japanese Cabinet.	J. Robinson.

NO.	TITLE.	CONTRIBUTOR.
174	Tea Caddy, Chinese,	J. Robinson.
175	Pair of Japanese Bottles,	J. Robinson.
176	Roman Lamp,	Miss M. E. Williams.
177	Pair of Japanese Platters,	J. Robinson.
178	Japanese Lacquer Platters,	J. Robinson.
179	Florentine Lamp,	Miss M. E. Williams.
180	Japanese Cabinet,	J. Robinson.
181	Japanese Vase,	J. Robinson.
182	Collection of Glass, etc.	Dep't of Tech. Essex In.
183	Collection of Tiles, etc.	Dep't of Tech. Essex In.
184	Collection of Beverly Pottery,	Mr. Lawrence.
185	Paper Making and Jug Making,	Dep't of Tech. Essex In.
186	Collection of Chinese and French Ware,	Mrs. C. F. Williams.



REGULAR MEETING, MONDAY, NOVEMBER 15, 1875.

VICE PRESIDENT GOODELL in the chair. Records read.

Mary E. Gould and George L. Upton of Salem were elected resident members.



REGULAR MEETING, MONDAY, DECEMBER 6, 1875.

MEETING this evening. In the absence of President and Vice Presidents, Mr. C. H. HIGBEE was requested to take the chair. Records read.

The SECRETARY announced the following correspondence :—

From Boston Public Library, Dec. 1; British Archæological Association, Nov. 27; Historical Society of Pennsylvania, Nov. 30; F. B. Hough, Washington, D. C., Nov. 15; M. Knoedler & Co., New York, Nov. 3; G. P. Lothrop, Boston, Nov. 13, 16; Maryland Historical Society, Nov. 24; R. C. Manning & Co., Salem, Dec. 1; New York Historical Society, Nov. 30; Charles C. Perkins, Boston, Nov. 14; C. O. Thompson, Worcester, Nov. 13, 16.

The LIBRARIAN reported the following additions:—

By Donation.

- BAGLEY, JOHN J., of Lansing, Mich. Proceedings at the laying of the corner stone of the Capitol of Mich., Oct. 2, 1873.
- BAKER, NATHANIEL B., of Des Moines, Iowa. Adjutant General's Report of Iowa, Jan. 1, 1874 to Jan. 1, 1875.
- COLE, MRS. N. D. Kindergarten Messenger, 14 numbers.
- HAMMOND, CHAS., of Monson, Mass. Catalogue of Monson Academy, 1875-76.
- HUMPHREYS, A. A., of Washington, D.C. Report of a Reconnaissance of the Black Hills of Dakota made in 1874, by Wm. Ludlow. 1 vol., 4to.
- KIMBALL, JAMES. Cape Ann Advertiser, Oct. and Nov., 1875.
- JOHN C. LEE. Commercial Bulletin, Aug. to Nov., 1875.
- LEVETTE, GEO. M., of Indianapolis, Ind. Indiana Agricultural Reports, 1874, 5 vols. Transactions of the Indiana Horticultural Society, 1874. Indianapolis Directory, 1872-73. House Journal, 1871. Senate Journal, 1871. Ohio Statistics, 1872. New School Law of Indiana, 1873. Laws of the State of Indiana, 1871.
- MATTHEWS, W. L., of Warsaw, Ind. Report of the Superintendent of Public Instructions of Indiana, 1874.
- MAYER, ALFRED M., of Hoboken, N. J. Miscellaneous pamphlets, 5.
- MERRITT, L. F. Essex County Mercury, May to Nov., 1875.
- NEFF, J. E., of Indianapolis, Ind. Documentary Journal of Indiana, 2 vols., 8vo. Report of the Secretary of State, Oct., 1873, 1 vol., 8vo.
- PUTNAM, F. W. On the Habits of the Blind Crawfish, 8vo pamph., 1875. New York Tribune, Sept., Oct., Nov., 1875.
- STEPHENS, W. H., of Lowville, N. Y. Statutes of South Carolina, Vol. I, 1836.
- STONE, B. W. New York Directory, 1873. Essex Co. Directory, 1870. Salem Directory, 1869. N. Y. Business Directory, 1874.
- STONE, E. M., of Providence, R. I. Report of School Committee of Providence, June, 1875.
- THORNTON, J. WINGATE, of Boston. The Garden of Health, 1 vol., 4to.
- WADSWORTH, H. E., of La Porte, Ind. Rockport City Directory, 1872-73.
- U. S. DEPARTMENT OF INTERIOR. Documents, 42nd Cong., 2 vols. 1st Sess., 43rd Cong., 36 vols.
- U. S. BUREAU OF EDUCATION. Report of the Commissioner of Education, 1874. 1 vol., 8vo.
- U. S. PATENT OFFICE. Official Gazette, Aug., Sept., Oct., and Nov., 1875.
- UPTON, JAMES. Baptist Missionary Magazine, 1870-74. Good Health, 1871. Missionary Magazine, 1870.
- WAKNER, OLIVER, of Boston, Mass. Mass. Public Documents, 1874, 5 vols. Acts & Resolves, 1875.
- WATERS, J. LINTON. History and Directory of Kent Co., 1870. Cincinnati Directory, 1840.
- UNKNOWN. Proceedings at the Centennial Celebration of the Battle of Lexington, Apr. 19, 1875. 1 vol.

By Exchange.

- AMERICAN ANTIQUARIAN SOCIETY. Proceedings of the, Apr. 28, 1875.
- AMHERST COLLEGE LIBRARY. Triennial Catalogue, 1875.
- ARCHIV FÜR ANTHROPOLOGIE, BRAUNSCHWEIG. Band viii. Aug., 1875.
- BELFAST NATURALISTS' FIELD CLUB. Annual Report of the, 1873-74. Guide to Belfast, 1 vol.

- BERWICKSHIRE NATURALISTS' CLUB. Proceedings of the, Vol. vii. No. II, 1874.
- BOSTON SOCIETY OF NATURAL HISTORY. Memoirs of the, Vol. ii. Part IV, No. 11, 1875. Proceedings of, Vol. xvi i, pt. I, II, 1875.
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REV. GEORGE F. WRIGHT, of Andover, read the paper of the evening, an abstract of which is here inserted.

INDIAN RIDGE AND ITS CONTINUATIONS.

The so-called "Indian Ridge" of Andover, Mass., has long been an object of curiosity to citizens, and of interest to geologists. In the "Transactions of the Association of American Geologists and Naturalists," for 1841 and 1842, Pres. Edward Hitchcock, of Amherst College, gave a detailed account of the formation so far as it had then been observed.¹ This distinguished observer characterized it as "decidedly the most interesting and instructive case [of moraine ridges] which he had met with." A map of it is given in the same paper, taken from a survey of Professor Alonzo Gray, then of Andover, now of Brooklyn, N. Y. This map, in reduced dimensions, reappears in Hitchcock's *Elementary Geology*,² as an illustration of "Submarine Ridges."

The formation is described as a series of narrow, partially parallel and interlacing ridges, composed of sand, gravel and boulders intermixed. These ridges are said to be from fifteen to thirty feet high and four or five rods through at the base, extending a mile and a half or more, in a line nearly north and south. Similar ridges two or three miles south are alluded to; and at South Reading, now Wakefield, twelve miles south of Andover, still other and higher ridges of a like nature were observed. At the close of his remarks upon the subject, Dr. Hitchcock writes, "I presume that still further careful examination of the region above described may show other similar ridges, or a continuation of those on the map. . . . I would gladly resurvey all the moraines with which I am acquainted, in the confident belief that now 'I have learnt

¹ See page 198.

² See page 260 (30th edition).

to see,' I should find many of them continuous ridges where I have supposed a confused group of moraines to exist." Acting upon this hint I have given my spare time for many months back, in attempting to add to our stock of knowledge upon the subject. I herewith furnish a brief survey of the results.

1. MEASUREMENTS. Taking them in order, going westward about half a mile from Andover depot, and measuring from their base, the East ridge is 41 feet high, the Middle or Indian ridge is 49 feet, and the West ridge 91 feet. The base is 40 feet above the Shawshin river, and 90 feet above the sea level. So that the summits of these ridges at this point are, respectively, 131, 139, and 181 feet above the ocean. The west ridge at the place of measurement is 250 feet broad at the base. I am indebted to various members of the scientific class of 1875, in Phillip's Academy, for assistance in securing these measurements.

2. COMPOSITION. These ridges were not primarily stratified, and so differ in an important respect (if their observations were sufficiently accurate) from the "Horsebacks" of Maine, described by Professor C. H. Hitchcock,³ and the "Kames" of Scotland, described by James Geikie.⁴ There is, however, usually a secondary stratification along the flanks of the ridge, and around the rim of the numberless basins that are enclosed by its interlacing branches, and in some places the entire ridge is stratified. But ordinarily, sand, gravel, pebbles and boulders are indiscriminately mingled. Boulders from a few inches to two or three feet in diameter are found in the higher portions of the Ridge as well as in the lower.

3. CHARACTER OF THE STONES. The stones of the ridge are uniformly rounded and polished, but I have

³ See Maine Agricultural Reports, 1861, 1862. ⁴ See The Great Ice Age, pp. 210-237.

failed to find any scratches upon their surface, such as are frequently found upon those of the "ground moraine" of this region. They are not of local origin, but consist, in indiscriminate mixture, of granite, gneiss, and slatestones from the North. Among these a rose quartz is abundant.

4. **EXTENT OF THE RIDGE.** With only such interruptions as are made by river valleys and water courses, or by other apparent causes, I have traced this series of ridges, in continuous line, from Wakefield, through Reading, North Reading, Wilmington, Ballardvale, Andover, Lawrence and Methuen to Salem in New Hampshire, a distance of nearly twenty-five miles as the bird flies. I have with tolerable certainty identified it on either side of these limits: south, in Melrose and Malden; north, as far as Derry Station, N. H.

5. **DIRECTION.** It will be observed that this line corresponds with the direction of the glacial striæ of this vicinity, about 15° N. W. by S. E. The line projected to the north would coincide with the axis of the Merrimack valley above Manchester, N. H.

6. **HYPOTHESIS.** We have not time to work out the details of the hypothesis which accounts for the facts so far as at present observed. It is sufficient to say that we expect eventually to demonstrate that this net-work of ridges is the medial moraine of that portion of the continental glacier which took its local direction from the Merrimack valley. The floods of water which during the period of its retreat flowed forth from the foot of that glacier would account for the partial stratification that is observed.

7. **CONCLUSION.** But we wait for further investigation, especially in the line north and south. And we solicit facts from any observers, first, as to the composition of the hills in this vicinity, and for twenty miles east or

west of the line of this Ridge, whether they are of solid rock, or of loose material, whether stratified or not, and whether the material is of local origin. And furthermore what is the direction of the axis of these "drift" hills? And are there elsewhere such ridges as we have described; and what is their direction? The Essex Institute would do an important work if its members should systematically collect the facts concerning the whole drift deposit of the Merrimack valley. When these are gathered and arranged, we can popularize for this region the intensely interesting subject of the glacial age, which now does not have the practical hold of the popular imagination that its merits, and the proximity of its phenomena, demand.

At the close of the lecture the subject was continued by remarks from Dr. A. H. Johnson, Messrs. W. P. Upham, C. H. Higbee and others, and a vote of thanks was passed to Mr. Wright for his instructive paper.

George West, George Newcomb and C. A. Shaw were elected resident members.



REGULAR MEETING, MONDAY, DECEMBER 20, 1875.

MEETING this evening. The PRESIDENT in the chair. Records read.

Robert C. Mills, Charles R. Mills, George W. Benson, E. K. Benson, Lewis F. Miller, S. F. Chase, D. B. Kimball and Abby R. Knight were elected resident members.

BULLETIN

OF THE

ESSEX INSTITUTE,

VOLUME VIII.

1876.

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BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8.

SALEM, MASS., JANUARY, 1876.

No. 1.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, JANUARY 3, 1876.

MEETING this evening. The PRESIDENT in the chair.
Records read.

The paper for the evening was on "The Instinct and Intelligence of Animals," by S. C. OLIVER.

Colonel Oliver illustrated his remarks with explanatory anecdotes, and said that spoken and written language and all the significant machinery of human life had come to be regarded as essential parts of our intelligence, and it would be no easy matter for us to represent to ourselves the movements of the human intellect deprived of the assistance of that artificial apparatus employed by human beings to enlarge the compass of thought and of knowledge. It is quite necessary however to make the attempt to set forth the fundamental peculiarities of intelligence in general, that we may, by this means, gain another step towards the rational explanation of the animal mind.

The first great feature of intelligence common to the

whole animal race, with of course difference of degree, we may express by the term *docility*, meaning by it the power of making acquisitions of every kind independent of the native or inborn capacities. There is evidently a great inferiority in the extent and in the character of the brute acquisitions as compared with humanity. It is doubtful how far an ordinary quadruped can revive the pictorial impressions of sight in the entire absence of the original so as to go through an operation truly mental, and live in the past, the present and the future. The best of animals can go but a little way towards recognizing the proportions of natural objects, chiefly on account of their utter want of all the artifices of indirect vision, which have their perfect exemplification in the human sciences.

It usually happens that every active weapon or instrument belonging to the structure of an animal is fully provided with nervous communications with all the other parts of the system through the common centre of nervous action, and is in this way put to employment on all convenient occasions. Nothing more is required than such a method of connection to insure the application of every species of active impulse wherever it can be of any avail. The electric organs of the torpedo are related by massive cords of nerve to the brain of the animal, and act in sympathy with its wishes and movements.

We are to conceive of each class of animals as possessed of a certain number of susceptibilities and active capacities in more or less measure of energy, and also of the power of harmonizing, combining and arranging the one to meet the other through the medium of a central brain, and as having this power in unequal degrees.

The varieties of the sense of hearing furnish a basis of discrimination of the animal species. This sense is, per-

haps, on the whole, less complex and less dignified than the sense of sight, but this last sense is more extensively possessed than the power of hearing. The development of the ear goes along with the development of the vocal organs, and there is a special connection between the two in the nervous system. When the ear and the voice are in tolerable perfection they are put to a variety of uses. Besides the employment of the voice in the expression of the animal emotion and in kindling up sympathies and inspiring terrors into fellow beings, it very soon shows itself as an organ of language, or as a means of communication between the different members of any society of animals.

The SECRETARY announced the following correspondence : —

From Amherst College Library, Dec. 13; E. P. Boon, New York, Dec. 9; Instituto Historico e Geographico do Brazil; Cincinnati Public Library, Dec. 21; Dresden Kais. Leop. Carol. Deutsche Akademie der Naturforscher, Oct. 29; Emden, Naturforschende Gesellschaft, Oct. 15; LeRoy F. Griffin, Hightstown, N. J., Dec. 22; Hague, Entomol. Soc. of Netherlands, Oct. 19; Liege, Societe Geologique de Belgique, Sept. 15; Liverpool Literary and Philosophical Society, Dec. 3; Lynn Public Library, Nov. 16; München, K. Bayerischen Akademie der Wissenschaften, Nov. 1; E. P. Robinson, Nov. 10; Stockholm, L'Acad. Roy. Suedoise des Sciences, Nov.; Charles P. Thompson, Washington, Dec. 17; Throndhjem K. Norske Videnskabs-selskab, July 15; Upsal, Société Royale des Sciences, Oct. 15, Nov. 15, 20.

At the close of the meeting, on motion of Mr. Wm. P. UPHAM, a vote of thanks was passed to Col. Oliver for his interesting communication.

The following persons were elected resident members : Mrs. D. B. Hagar, Mrs. C. H. Miller, Mrs. J. O. Safford, Mrs. D. W. Bowdoin, Harriet A. Austin, Hannah H. Silsbee, Horace N. Smith, Andrew D. Cross, Thomas H. Johnson., all of Salem.

REGULAR MEETING, MONDAY, JANUARY 17, 1876.

MEETING this evening. The PRESIDENT in the chair. Records read.

Mr. JOHN ROBINSON brought to the notice of the meeting the finding of the willow (*Salix discolor*) in blossom, stating that this was rarely the case in midwinter.

Mr. GEORGE M. WHITE, of Salem, read a paper on "Pottery," illustrating the same by some beautifully colored cartoons, prepared by himself, of some of the most celebrated specimens of pottery on record. He commenced by giving a brief sketch of the art in the earliest period of its history when the clay was made sufficiently hard for the simple wants of the people by exposure to the sun. The baking of the clay, so as to produce an indestructible tenacity was an immense stride, a rough and rude ornamentation was at that time adopted. Another step in the process was in rendering the vessels less porous and better fitted to hold liquids by covering them with an impervious glaze. Then followed the use of copper to obtain the brilliant blue enamel; other materials and processes were afterwards gradually introduced for the various kinds of ornamentation which was carried to so high a degree of perfection as to require the talents and skill of the most noted artists, and have become an almost inexhaustible source for illustrating the mythology, the history and the customs of the people.

A communication was read from Mr. JOHN J. HUTCHINSON, executor of the will of the late Miss ABBY W. DITMORE, in relation to the bequest therein noted.

On motion of Mr. A. C. GOODELL

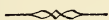
Voted, That the Essex Institute will accept the bequest made by the residuary clause of the will of Abbie W. Ditmore, late of Salem, singlewoman, deceased, on the condition therein expressed, and will pay the income of the same to Frederick J. Perkins, cousin of said testatrix, during his life, and the Treasurer of said Institute is hereby authorized and directed to give a receipt for the same, and to pay the income thereof as required by said will during the life of said Frederick J. Perkins.

Voted, That said Treasurer be authorized to give bond to said executor to refund to said executor any part of said sum that may be recovered against said executor or said estate within two years of his acceptance of said trust.

On motion of Mr. R. C. MANNING it was

Voted, That the thanks of the Institute be given to Mr. George M. White for his handsomely illustrated lecture.

The following persons were elected resident members :
Mrs. J. F. Tuckerman, Edward Kemble, Winchester Smith, Samuel C. Oliver, Mrs. F. H. Lee, Chas. Henry Andrews, Wm. Phineas Parker, Clarence Edward Murphy.



SPECIAL MEETING, MONDAY, JANUARY 31, 1876.

THE PRESIDENT in the chair. The meeting this evening attracted a large audience.

Rev. E. S. ATWOOD gave an explanation of the manufacture of silver plated ware, illustrated by the elegant specimens which have recently been added to the technological department of the Institute through the generosity of Messrs. Reed and Barton, of Taunton, manufacturers, whose establishment ranks among the most distinguished.

The lecture was listened to with the utmost interest and closest attention.

The lecturer commenced with an allusion to the silver plating practised by the ancient Romans, the silver being soldered to copper and rolled out. This method was continued until the middle of the 18th century and was called the French process. He also spoke of the silvered wires for filigree work.

The French process was succeeded in England by fire-plating—silver fused upon copper without solder—known as the Sheffield process. In this the weight of silver was 1-24 to 1-30 that of the copper. This ware is remarkably serviceable and does not tarnish. A specimen more than a hundred years old was exhibited and the plating was apparently as perfect as when first made.

Amalgam plating was next described—silver and mercury mixed, the mercury volatilized.

The first electro plating, which is the modern process, was done in 1803, by Brugnatelli, a pupil of Volta. Elkington's patent was issued in 1840, and it was not until within twenty-five or thirty years that the manufacture began to assume its present proportions.

The general composition of the three bases, Britannia, German silver, and nickel silver was then given, Britannia being a compound of lead, tin, and antimony; German silver, of copper, zinc, and nickel; and so on.

The lecturer then took his audience into the manufacturing room and described the process by which the raw material is worked up into hollow ware, and spoons and forks, which latter is a special department of the business. The various methods of "chasing" were then considered, and silvered plates illustrating each variety were exhibited. The "plating" room was next described, with an enumeration of the various chemical and galvanic oper-

ations, employed at that stage of the work. Following this was a detailed account of the method of "burnishing," by which the lustreless silver is made to take on a high polish. The lecture closed with some practical directions as to the best way to buy, cleanse, and preserve the various articles of plated ware in use in the household.

A handsome tablet, containing specimens of the raw materials used, and of articles in various stages of manufacture, was among the donations by Reed & Barton, and the specimens, being removable, were, with the finished articles, passed around among the audience and enabled the listeners to follow the explanations with great satisfaction.

The LIBRARIAN reported the following additions to the library :—

By Donation.

- BOLLES, E. C. Miscellaneous pamphlets, 10.
 BUNKER HILL MONUMENT ASSOCIATION. Proceedings of the. At the Annual Meeting, from 1861-1874. 1 vol. 8vo.
 CALEF, JOHN. Boston Gazette, 1805, 1806. 2 vols. folio.
 CHASE, ANNE A. Journals of Madam Knight and Rev. Mr. Buckingham, written in 1704-1710. 1 vol. 8vo.
 COLE, MRS. N. D. Salem Gazette, July-Dec., 1875.
 COOK, JAMES. Miscellaneous pamphlets, 17.
 EMILIO, L. F., OF SAN FRANCISCO, CAL. Report of the San Francisco Park Commissioner, 1874-75. 8vo, pamph.
 GREEN, S. A., OF BOSTON, MASS. Little Wanderer's Advocate, 1872. 1 vol. 8vo. Miscellaneous pamphlets, 7.
 GREENWOOD, ISAAC J., OF NEW YORK. The Willoughby Family of New England. 8vo, pamph., 1876.
 JENNISON, O. A., OF LANSING, MICH. City Directory, 1853, 1854. 1 vol. 8vo.
 KIMBALL, JAMES. Cape Ann Advertiser, Dec. 3, 10, 17, 24, 31, 1875.
 LEE, JOHN C. Commercial Bulletin, Oct. 30, Nov. 6, 20, 27, Dec. 4, 1875.
 MERRITT, L. F. Essex Co. Mercury, Dec., 1875.
 PERRY, W. S., OF GENEVA, N. Y. Journal of the General Convention of the Protestant Episcopal Church in the U. S., 1874. 1 vol. 8vo.
 PUTNAM, F. W. Paper on Cylinder Condensation, by G. B. Dixwell. 8vo pamph.
 ROSES, W. L., OF ANDOVER, MASS. Catalogue of Andover Theological Seminary, 1875-6. 8vo, pamph.
 SHIPMAN, WM. R., OF COLLEGE HILL, MASS. Catalogue of the Officers and Students of Tufts College, 1875-6. 8vo, pamph.
 U. S. PATENT OFFICE. Official Gazette, Nov. 16, 23, 30, Dec. 14, 28, 1875.
 WATERS, J. LINTON. Miscellaneous pamphlets, 5.

By Exchange.

AMERICAN ANTIQUARIAN SOCIETY. Transactions of. Vols. v, vi. 2 vols. 8vo.
 BOSTON SOCIETY OF NATURAL HISTORY. Proceedings of. Vol. xviii, sigs. 9, 10, 11, 1875.

CAEN, FRANCE, ROYALE ACADEMIE DES SCIENCES, ARTS ET BELLES-LETTRES. Memoires, 1875. 1 vol. 8vo.

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DRESDEN, NATURWISSENSCHAFTLICHE GESELLSCHAFT ISIS. Sitzungs-Berichte Jahrg. 1874, Oct.-Dec.

MICHIGAN STATE LIBRARY. Joint Documents, 1842, 1843, 1844, 1850, 1851, 1853, 1854, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869. Laws of Michigan, 1845, 1857, 1858, 1861, 1862, 1867, 1869, 1870, 1871, 1872. Senate Documents, 1853, 1855, 1857, 1859, 1861, 1863, 1865. House Journal, 1849, 1858, 1859, 1861, 1863, 1864, 1865, 1867, 1869, 1870, 1871. Senate Journal, 1850, 1857, 1858, 1859, 1861, 1863, 1864, 1865, 1867, 1869, 1870. Senate and House Documents, 1843, 1853, 1862, 1867, 4 vols. 8vo. Revised Statutes of Michigan. 1 vol. 8vo. Geological Survey of Michigan, 1860, 1 vol. 8vo. Census of Michigan, 1874, 1 vol. 8vo. Statistics of Michigan, 1870, 1 vol. 8vo. Catalogue of Michigan State Library, 1875-76, 1 vol. 8vo. State Board of Health, 1873-1874, 2 vols 8vo. Registration Reports, 1 vol. 8vo. Michigan Pomological Society, 1871-72, 1873, 1874, 4 vols. 8vo. Michigan Board of Agriculture, 1865, 1866, 1867, 1870, 1871, 1872, 1873, 1873-4, 7 vols. 8vo. Michigan Insurance Reports, 1871, 1872, 1873, 4 vols. 8vo. Compiled Laws, 2 vols. 8vo. Convention Journal, 1867, 1 vol. 8vo. Edmund's Impeachment Trial, 2 vols. 8vo. Michigan School Reports, 1865, 1866, 1869, 1871, 1872, 5 vols. 8vo. Report of Superintendent of Public Instruction, 1873, 1 vol. 8vo. Public and Local Acts of Michigan, 1874, 1 vol. 8vo. Public Acts, 1875, 1 vol. 8vo. Local Acts, 1875, 1 vol. 8vo. Convention Debates, 1867, 2 vols. 4to. In all 178 volumes, and 75 Miscellaneous Pamphlets.

MICHIGAN GEOLOGICAL SURVEY. Vols. i, ii, 1869-1873, 2 vols. 8vo, Maps.

N. E. HISTORIC-GENEALOGICAL SOCIETY. Register, Jan., 1876. Diary of Dr. Ezra Green. Centennial Orations, 1874-1875, 1 vol. 8vo.

PARIS, FRANCE, INSTITUT HISTORIQUE. L' Investigateur Mai-Août, 1875.

PARIS, SOCIÉTÉ D'ACCLIMATION. Bulletin Mensuel. Tome ii, 3e Serie. Mai, Sept., 1875.

PARIS, SOCIÉTÉ D'ANTHROPOLOGIE. Bulletins. Tome ix, 11e Serie. Mai, Nov., 1874.

PUBLISHERS. American Journal of Science and Arts. American Naturalist. Beetle and Wedge. Boston Daily Globe. Bradford New Era. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Salem Gazette. Salem Post. Salem Register. Gardener's Monthly. Gloucester Telegraph. Lynn City Item. Peabody Press. Salem Observer. Medical and Surgical Reporter. Turner's Public Spirit.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8. SALEM, MASS., FEBRUARY, 1876. No. 2.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, FEBRUARY 7, 1876.

Meeting this evening. The PRESIDENT in the chair.
Records read.

Mr. S. G. W. BENJAMIN of Boston gave a lecture on "The Theory and Practice of Art," which was attentively listened to by a large and appreciative audience.

The high expectations which the lecturer's reputation as a writer had excited, were not disappointed. The paper presented was an eminently able and finished production, giving, in terse and attractive style, a vast deal of information to the uninitiated in art matters.

The lecturer commenced with a brief statement of the development of interest in the fine arts, in America, during the last quarter of a century, and warmly commended the progress that had been made. But by the very rapidity of that progress we are in danger of being super-

ficial, a danger to be guarded against by understanding the real character and scope of art.

Art was defined as the offspring from the poetic yearnings and emotions suggested by aspirations after the true, the good, and the beautiful. In the strict meaning of the term, it is the appeal to the imagination through the eye, by means of external forms. Religious architecture has been in the past the first of the arts to receive attention. Sculpture follows and then the arts of design. Only the highest art is cosmopolitan. The criticism was passed upon French art that it confines itself to the expression of the beautiful, while the Germanic races make place for the moral element. The IDEAL is the ultimate aim of art, and no technical excellences can atone for its absence. The fine arts and the industrial arts, it was claimed, stand on the same level, when the expression of the beautiful is the common aim. Cellini is no more an artist when he executes his silver statue of Perseus, than when he designs his silver salt cellar for Francis First. The limitations and modes of art were next discussed. The plastic arts and the arts of design constitute the two grand divisions. The three grand limitations are form, light and shade, and color. The arts of design include form, color, and light and shade, and, requiring for their perfection the whole art triad, deservedly take the highest rank.

Color was declared to be the EMOTIONAL element in painting. In some people it awakens the same feelings as music. Scarlet is the emblem of rage. Turner added awful significance to his picture of the slave ship, throwing slaves overboard, by representing the sun, the hue of blood, sinking low down over a gray waste of angry sea. Black and white are hues in harmony with our more solemn emotions. Color appeals more to the soul than to the intellect. A scientific knowledge of chromatic

effects is essential, and comes only as the result of study, observation and practice.

In the application of these fundamental principals of the arts of design to practice, four points are to be mastered : perspective, tone, values, and composition. Perspective is linear and aerial ; the former founded upon the convergence of imaginary geometric lines, the latter a matter of feeling and observation. Tone is a term borrowed from music, suggested by the limited power of material colors to give the impression of light. White is the starting point, and everything in the picture has to be pitched on that key. The stronger the effect required, the lower must be the tone. The term "values" is used to indicate the equilibrium between a given effect and the materials at command. Only great artists can disregard them with safety. Composition is the application of all these principles to the conception of a work of art. Examples were given of artists who had excelled in each or all of these particulars. Artists as a whole are agreed upon these theories, but differ when they come to reduce them to practice ; and on this point a very sharp and deserved criticism of many art critics was given. The least diversity between theory and practice is found in the plastic arts. In regard to the arts of design there is endless controversy. A consideration of the comparative merits and demerits of water colors and oil pigments followed, and the excellences of each stated, the large preference in point of dignity and durability being given to paintings in oil. In this department every great artist has his own method of employing colors.

The lecturer then explained the importance of careful study and application, while at the same time the superhuman power of real genius was admitted. This point was exquisitely illustrated by a description of a church

spire in Brittany, "a tower from whose floor one looks up to the finial at the extreme top, through a hollowed shell of stone tracery work three hundred feet high, entirely clear of brace or buttress, pier, beam, or bracket, nothing to break the astonishing sight but the doves flying in the dizzy cavity, and the sun flashing here and there through the open carvings, while the wind breathes, from age to age, a grand æolian chant through that organ of granite."

The comparative merits of painting from models, or from memory and imagination, received attention, and great stress was laid upon the importance of proficiency in drawing, before attempting to work in colors. The proper canons of art criticism and judgment on the part of the general public were very succinctly and fairly stated. It should be unprejudiced, and take into account the artist's purpose, with constant remembrance that we may be tempted to condemn what is really admirable in its way, but not addressed to our personal taste, which may be one-sided and partial.

The lecture closed with a brilliant characterization of art, as the embodiment of the "life blood of master spirits," as a historic record, giving events an immortality in form and color, and as a minister to man's highest nature. It was finely written, and well delivered, and those who were not present may comfort themselves with the thought that they missed one of the most exhaustive and instructive lectures that has ever been given in Salem.

W. H. Simonds, Jr., of Salem, and E. P. Robinson of Saugus were elected resident members.

REGULAR MEETING, MONDAY, FEBRUARY 21, 1876.

MEETING this evening. The PRESIDENT in the chair.
Records read.

The new draft of the By-laws was read, as follows:—

ARTICLE I. — MEMBERS.

SECTION 1. Any person may be elected a member, at a Regular Meeting by a majority of the members present and voting, the name of such person having been proposed in writing by two members at a previous meeting.

SECT. 2. Any person not residing in the County of Essex may be elected a corresponding member upon nomination by the Board of Directors, but corresponding members shall not be eligible to office, or entitled to vote. Any member removing from, or residing out of the county, may become a corresponding member, by giving notice of his intention and paying all arrears.

ARTICLE II. — OFFICERS.

SECTION 3. The officers shall be a President, four Vice-Presidents, a Secretary, a Treasurer, an Auditor, a Librarian, and Curators of Departments who, with the Chairmen of the Standing Committees, shall be the Board of Directors.

SECT. 4. The Board of Directors may appoint an Associate Curator of any department upon nomination of the Curator of the same department; and may appoint an Assistant Librarian, upon nomination of the Librarian. But the appointment of such Associate or Assistant, shall not make him a member of the Board of Directors.

SECT. 5. The Board of Directors may at any time remove an Associate Curator or Assistant Librarian.

ARTICLE III. — COMMITTEES.

The following Committees shall be chosen at the Annual Meeting:

SECTION 6. A Finance Committee (of which the President shall be *ex officio* Chairman, and the Treasurer *ex officio* a member), to have the direction of the funds of the Institute, in accordance with the Act of Incorporation, and of such investments of funds as may be necessary.

SECT. 7. A Library Committee (of which the Librarian shall be *ex officio* a member), who shall make an annual examination of the condition of the Library.

SECT. 8. A Committee on Publications, who shall have the management of all publications of the Institute, and regulate the manner of their distribution.

SECT. 9. A Lecture Committee, who shall have charge of all lectures and public meetings, except such as may be held or given for the benefit of a special department of the Institute, and except Field Meetings.

SECT. 10. A Committee on Field Meetings (of which the Secretary shall be *ex officio* Chairman) who shall determine when and where Field Meetings shall be held, and shall have the general management of the same.

SECT. 11. Each of these Committees, unless herein otherwise provided for, shall choose a Chairman, whose election shall be immediately certified to the Secretary, and such election shall constitute him a Director.

SECT. 12. The several Committees shall report at the Annual Meeting.

ARTICLE IV. — DEPARTMENTS.

The Management of the Institute shall be divided into the following Departments:—

SECTION 13. The Department of History, which shall include Historical Materials and Antiquities.

SECT. 14. The Department of Manuscripts.

SECT. 15. The Department of Archæology, which shall include Ethnology.

SECT. 16. The Department of Numismatics.

SECT. 17. The Department of Geology, which shall include Mineralogy, and Palæontology.

SECT. 18. The Department of Botany.

SECT. 19. The Department of Zoölogy.

SECT. 20. The Department of Horticulture.

SECT. 21. The Department of Technology.

SECT. 22. The Department of Music.

SECT. 23. The Department of Art, embracing Painting, Sculpture, and Engraving.

ARTICLE V. — MEETINGS.

SECTION 24. Regular Meetings shall be held on the first and third Mondays of each month; at the Rooms of the Institute, at 7½ o'clock, P. M. The second meeting in May shall be the Annual Meeting.

SECT. 25. Special Meetings may be called by order of the President, or at the written request of five members. Business to be transacted at a special meeting shall be limited to the subjects stated in the call.

SECT. 26. Field Meetings shall be held at such times and places as the Field-meeting Committee may designate.

SECT. 27. The Board of Directors shall meet on the first and third Mondays of each month, at 7 o'clock, P. M., at the Rooms of the Institute, and at such other times as they may be called together by the President.

SECT. 28. Five members shall be a Quorum for holding any meeting of the Institute, or of the Board of Directors, but any less number, of whom the Secretary shall be one, may have power to adjourn the meeting.

SECT. 29. Officers shall be elected at the Annual Meeting, but vacancies may be filled by election at any Regular Meeting.

SECT. 30. All Elections shall be by ballot, and by a majority of the members present and voting.

ARTICLE VI.—DUTIES OF OFFICERS AND COMMITTEES.

SECTION 31. The President, or in his absence one of the Vice-Presidents, shall preside at all meetings of the Institute, and of the Board of Directors. The President shall be *ex officio* Chairman of the Finance Committee.

SECT. 32. The Secretary shall give notice of all meetings and record their proceedings; shall notify all members and officers of their election; shall have charge of all papers and documents relating to the general business of the Institute; shall conduct the general correspondence; and shall report the doings of the Institute during the year, at the Annual Meeting. He shall acknowledge the receipt of all donations except those to the Library. He shall record in a book kept for that special purpose the By-laws of the Society and the names of its members, with the date of their election, and whenever any alteration, amendment, or repeal of the By-laws is made, the same shall be entered in said book. He shall be *ex officio* Chairman of the Field-meeting Committee, and shall perform such other duties as the Board of Directors shall from time to time designate by vote.

SECT. 33. The Treasurer shall be *ex officio* a member of the Finance Committee, and shall keep an exact account of all his receipts and expenditures, and shall submit his report, after examination by the Auditor, at the Annual Meeting.

SECT. 34. The Auditor shall audit all accounts of the Treasurer, Curators and Committees, and shall report at the Annual Meeting.

SECT. 35. The Librarian shall be *ex officio* a member of the Library Committee. He shall receive, and have the custody of, all books and other printed works, maps, charts, and diagrams of the Institute; shall attend to their arrangement, cataloguing and preservation; shall conduct the correspondence relating to the Library and acknowledge all

donations thereto; and shall report on its condition at the Annual Meeting.

SECT. 36. The Library Committee shall divide the books, and other articles, belonging to the Library, into two classes; namely, (A) those which are not to be removed from the building, except upon the written permission of the Library Committee; (B) those which may circulate under such rules as may be prepared by the Library Committee, and approved by the Board of Directors, which rules shall have the force of By-laws. A copy thereof shall be pasted on the cover of each volume.

SECT. 37. The Board of Directors shall have full power to transact all the general business of the Institute, except the election of members and officers; and may, when they deem it best, refer any matter to the general meeting of the Society for its action. They shall decide, subject to the control of the Society, how and when the general resources of the Society, not devoted to any particular department, shall be expended; and shall assign all space or location of specimens for each Department, and shall determine all questions that may arise between any of the Curators.

SECT. 38. The Curators shall have charge of their respective Departments, and shall have full power relating to the collection, care and preservation of the specimens or materials relating thereto: provided, however, that any alteration of the general plan or principle of arrangement of any department and the removal of specimens or other material except for the purpose of exchange, shall be made only with the consent of the Board of Directors, or under such regulations as they may, from time to time, prescribe. Curators shall have charge of all Lectures, Exhibitions, or Entertainments, given for their respective Departments. All moneys or funds that may at any time be raised by any Curator, or that may come into his hands for the benefit of his Department, and the net proceeds of any Lecture, Exhibition or Entertainment under his charge, shall be deposited by him with the Treasurer, who shall give him a receipt therefor, and place the amount to the credit of that Department. Each Curator shall have authority to draw upon the Treasurer from time to time, for the purposes of his Department, to the amount standing to its credit; excepting, however, such funds as may be permanently invested, of which the income only, shall be subject to such authority. Each Curator shall report on the condition and wants of his Department, at the Annual Meeting.

ARTICLE VII. — ASSESSMENTS.

SECTION 39. An assessment of three dollars shall be paid by every member on admission, and annually thereafter on the third Monday in May.

SECT. 40. No member who shall be in arrears for one year shall be entitled to vote or hold any office; and any member so in arrears, who shall refuse or neglect to pay his dues for six months after being notified thereof by the Treasurer, by written notice duly recorded, shall cease to be a member of the Institute. *Provided*, however, that any member may, in lieu of the annual assessment, pay the sum of *thirty dollars*, to be added to the funds of the Institute, the annual interest thereof to be considered as the payment of the annual assessment of said member.

SECT. 41. Members elected more than four months, and within eight months after an Annual Meeting, shall have one dollar deducted from the next annual assessment; and members elected eight months or more after an Annual Meeting, shall have two dollars deducted from the next annual assessment.

SECT. 42. The President and Treasurer may exempt members from assessments, when they may deem it for the interest of the Society.

ARTICLE VIII. — APPROPRIATIONS.

SECTION 43. No Member, Officer, or Committee, except the Board of Directors, shall incur any debt whatever in the name of the Institute; but whenever money shall be expended under any appropriation, an account of receipts and expenditures, with the vouchers therefor, shall be rendered to the Treasurer by the party having the same in charge, and the net receipts, if any, shall be paid into the Treasury within thirty days after the object for which the appropriation was made shall have been accomplished.

SECT. 44. When no appropriation shall have been made, a statement of all receipts and expenses incurred shall be made to the Treasurer in like manner; and when all bills shall have been paid, the net receipts shall be turned over to the Treasurer, unless it have been otherwise previously ordered by the Board of Directors. The Board of Directors may, in either case above named, in the name of the Institute, assume all liability for any such debt as may be outstanding, when the balance of said receipts shall have been placed in the Treasurer's hands; provided they are satisfied that the gross receipts exceed all expenses incurred by the party in charge, and that the business or entertainment has been previously authorized by the Institute or the Board of Directors.

ARTICLE IX. — ROOMS.

SECTION 45. The Rooms shall be open to members and the public at such times and under such regulations as the Directors may determine.

SECT. 46. Visitors may be introduced by any member.

ARTICLE X. — AMENDMENT OR ALTERATION OF BY-LAWS.

SECTION 47. The By-laws may be altered, repealed or amended by the votes of two-thirds of the members present and voting, at a Regular Meeting, notice of the proposed alteration, repeal or amendment, having been given in writing at a previous Regular Meeting.

The SECRETARY announced the following correspondence:—

From American Antiquarian Society, Jan. 22; E. T. W. Baker, Dorchester, Feb. 11; S. G. W. Benjamin, Boston, Jan. 25, Feb. 9; N. H. Chamberlain, Cambridge, Feb. 9; C. F. Crocker, Lawrence, Feb. 11; Frank M. Etting, Philadelphia, Penn., Feb. 10; V. A. de Gougniez, Bordeaux, Jan. 25; R. M. C. Graham, New York, Jan. 21; J. C. Holmes, Detroit, Mich., Jan. 4; T. H. Johnson, Jan. 6; D. B. Kimball, Jan. 4; A. R. Knight, Dec. 27; E. D. Marchant, Boston, Feb. 17; John T. Monlton, Lynn, Jan. 4, Feb. 18; J. Munsell, Albany, N. Y., Jan. 29; J. D. Philbrick, Boston, Dec. 30; Rantoul Literary Society, Rantoul, Ill., Jan. 19; E. P. Robinson, Sangus, Feb. 11; John Robinson, Jan. 19; St. Petersburg, Jardin Imperial de Botanique, Dec. 19; Salem, Ladies Centennial Committee, Jan. 8; Horace N. Smith, Jan. 5; M. E. Williams, Jan. 27.

The LIBRARIAN reported the following additions:—

By Donation.

- BLECK, E. F., OF BETHLEHEM, PA. Miscellaneous pamphlets, 9.
 CUTLER, A. E., OF CHARLESTOWN, MASS. Report of the Managers of the Winchester Home Corporation, Jan., 1876. 8vo pamph.
 FROTHINGHAM, RICHARD. The Battle Field of Bunker Hill. 8vo pamph.
 GREEN, S. A., OF BOSTON, MASS. Miscellaneous pamphlets, 8.
 HOLMES, JOHN C., OF DETROIT, MICH. The Detroit Conglomeration, Jan. 31, Feb. 1, 2, 3, 4, 5, 7, 1876.
 HUMPHREYS, A. A. OF WASHINGTON, D. C. Report of the Chief of Engineers, 1875. Vols. I, II. 2 vols., 8vo.
 HUNT, MRS. T. U. S. Naval Astronomical Expedition. 2 vols., 4to. Report on the U. S. and Mexican Boundary. 1 vol., 4to. Miscellaneous pamphlets, 50.
 HUNT, T. F. Log Books, 2.
 KIMBALL, JAMES. Dialogues on Theology, by D. N. Prime. 1 vol., 12mo. Cape Ann Advertiser, Jan. 7, 14, 21, 28, Feb. 4, 11, 1876.
 LEE, FRANCIS H. Miscellaneous pamphlets, 45.
 MANNING, R. C. Boston Advertiser for Jan., 1876.
 PALFRAY, C. W. Miscellaneous pamphlets, 58.
 ROBINSON, JOHN. Miscellaneous pamphlets, 112.
 THOMPSON, CHAS. P., M. C. Wilson's Report on the Credit Mobiler. 1 vol., 8vo. Report Poland Committee. 1 vol., 8vo. Smithsonian Report, 1874. 1 vol., 8vo. Report of the Commissioner of Education, 1874. 1 vol., 8vo.
 U. S. BUREAU OF NAVIGATION. Astronomical and Meteorological Observations for 1873. 1 vol. 4to.
 WATERS, J. L. Miscellaneous pamphlets, 15.
 WILLIAMS, JAMES, OF COLUMBUS, OHIO. Report of the Auditor of State, 1875. 1 vol., 8vo.

By Exchange.

- AMERICAN PHILOSOPHICAL SOCIETY. Proceedings of. Vol. xiv, No. 95. June-Dec., 1875.
- AMERICAN GEOGRAPHICAL SOCIETY. Bulletin, 1875-76. No. I.
- BOSTON PUBLIC LIBRARY. Bulletin for January, 1876.
- BOSTON SOCIETY OF NATURAL HISTORY. Proceedings. Vol. xviii, Jan., 1876.
- BUFFALO SOCIETY OF NATURAL SCIENCES. Bulletin. Vol. iii, No. II. 1875-6. 8vo.
- DRESDEN, NATURWISSENSCHAFTLICHEN GESELLSCHAFT-ISIS. Sitzungs-Berichte Jahrg., 1875. Jan.-Juin.
- DRESDEN, VEREIN FUR ERDKUNDE. xii Jahresbericht. 1875.
- EMDEN, NATURFORSCHENDEN GESELLSCHAFT. Sechzigster Jahresbericht, 1874. 8vo.
- HARVARD COLLEGE. Report of the President and Treasurer of, 1874-75.
- LEEDS PHILOSOPHICAL AND LITERARY SOCIETY. Annual Report, 1874-5.
- LIVERPOOL LITERARY AND PHILOSOPHICAL SOCIETY. Proceedings. No. xxix. 1874-75.
- LONDON ROYAL SOCIETY. Proceedings of. Vol. xxii. Nos. 151-155. Vol. xxiii. Nos. 156-163. 1874-75.
- NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. Proceedings of the. Jan. 5, 1876. Brief History of the, N. E. Historic-Generalogical Register, 1847-76.
- N. Y. GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Record. Vol. vii, No. 1. Jan., 1876.
- N. Y. STATE LIBRARY. Report of the Trustees of the. 1874. 1 vol., 8vo. Report of the Regents of the University, 1874. 1 vol., 8vo. Report of the Regents of the University on the boundaries of the State of N. Y., 1873. 1 vol., 8vo.
- PEABODY ACADEMY OF SCIENCE. Memoirs of the. Vol. i, No. IV. Dec., 1875.
- SOMERSETSHIRE ARCHÆOLOGICAL AND NATURAL HISTORY SOCIETY. Proceedings for 1874. Vol. xx. 1 vol., 8vo.
- STOCKHOLM, KONEGLIGA SVENSKA VETENSKAP-AKADEMIEN. Handlingar, Band 9, 10, 12, 1870, 1871, 1873. Oversigt, Vol. 20, 29, 30, 1871-1872-1873. Bihang, Band I, No. 1, 2, 1872; Band II, No. 1, 2, 1873. Lefnadsteckningar, Band Hafte 3, 1869-73.
- ST. GRAVENHAGUE, ENTOMOLOGICAL SOCIETY OF THE NETHERLANDS. Tijdschrift Voor Entomologie, Vol. 17, 1873-74.
- THRONDJEM KONEGELIGE NORSKE VIDENSKABERS-SELSKAB. Aarsberetning for 1874.
- UPSAL SOCIETE ROYALE DES SCIENCES. Nova Acta. Ser. iii, Vol. ix, Fasc. I, II, 1871-1875. Bulletin, Vol. v, Nos. 7-13, 1873. Vol. vi, 1874.
- VERMONT HISTORICAL SOCIETY. Governor and Council. Vol. 3, 1782-1791. 1 vol., 8vo.
- VERMONT STATE LIBRARY. Senate Journal, 1874. 1 vol., 8vo. House Journal. 1874. 1 vol., 8vo. Transactions Dairyman's Association, 1875. 1 vol., 8vo. School Laws of Vermont, 1875. 1 vol., 8vo.
- WISCONSIN STATE HISTORICAL SOCIETY. Annual Report, 1876.
- PUBLISHERS. American Journal of Sciences and Arts. American Naturalist. Beetle and Wedge. Boston Daily Globe. Bradford New Era. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn City Item. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Gazette. Salem Observer. Salem Post. Salem Register. Turner's Public Spirit.

The PRESIDENT introduced Rev. N. H. CHAMBERLAIN, of Cambridge, who delivered an entertaining lecture on

"The way of making orators." Mr. Chamberlain traced the history of oratory and public speaking from an early age to the present time, and in this connection gave a brief but interesting sketch of the life of Francois Delsarte, the founder of "the Practical School of *Æsthetics and Art*" in Paris, which was very celebrated; reciting particularly some of the incidents of Delsarte's early days, his many bitter struggles and disappointments, the success that attended his first appearance on the stage, his subsequent brilliant career as a singer and actor until an impaired voice compelled him to retire; the subsequent devotion to his studies and to the establishment of his school. Delsarte was a descendant of the Delsartos of Italy; born in the north part of France, Nov. 11, 1811, died July 20, 1871.

The lecturer claims to be a believer in Delsartism, and said it had been called a science, and in his opinion justly. Mr. Chamberlain gave several short readings and recitations showing the difference between a correct and faulty rendering of the various passages.

At the close of the lecture on motion of Mr. W. P. UPHAM, a vote of thanks was passed to Mr. Chamberlain for the lecture delivered this evening.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8. SALEM, MASS., MAR., APR., MAY, 1876. Nos. 3, 4.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, MARCH 6, 1876.

Meeting this evening. The PRESIDENT in the chair.
Records read.

WILLIAM P. UPHAM, Esq., read a very interesting
paper narrating

INCIDENTS DURING THE OCCUPANCY OF BOSTON BY THE
BRITISH TROOPS IN 1775-6.

These incidents were gleaned from many family letters, journals, diaries, etc., that had recently come into his possession, or had been loaned to him for the preparation of this paper.

Among them were many letters written at that period to Oliver Wendell, a merchant in Boston at the time of the Revolution. Mr. Wendell was in consultation with the early patriots of the Revolution, and contributed to the country's liberty and independence. He was for some-time one of the Selectmen of Boston, was often a mem-

ber of the Senate and of the Council under the Constitution, and was for many years the Judge of Probate for the County of Suffolk. He was residing, January 1, 1775, on the corner of School Street opposite the King's Chapel.

The shutting up of the port of Boston by the Boston Port Bill, June 1, 1774, produced the greatest suffering and distress, and aroused the intensest indignation throughout the whole country. The people could not submit; there was a feeling that the evils of war were imminent; "and a gloom settled upon the inhabitants of Boston and the surrounding towns which is reflected from the correspondence and journals of the time." On the 19th of April, 1775, all intercourse between the people of Boston and the country was cut off by order of Gen. Gage; but on the 22d an agreement was made that the inhabitants might, upon surrendering their arms, "leave the town with their families and effects, and those who remained might depend upon the protection of the Governor." Gage subsequently violated this agreement, at first obstructing such removals and finally denying passes for that purpose.

A century has passed since the occurrence of the facts which were here recited, and although our country, during that interval, has several times been engaged in war, especially in the recent civil conflict (1861-65), yet the scenes have been so far removed from our hearth and homes that we know but little of its direful effects, and consequently can scarcely realize the trying events that our ancestors were encountering at the opening of the Revolutionary struggle, the centennial anniversaries of the leading events of which are now in process of a due commemoration by a grateful posterity. Much has been written on these subjects, and the admirable work of

Hon. Richard Frothingham on the Siege of Boston seems to be almost exhaustive, yet the recital of the daily notes and record of events, either in letters between members of the same family, or those engaged in close business connections, or in diaries, give an insight into the inner life of the people which has necessarily escaped, to a certain extent, the notice of the historian or the annalist.

Mr. Upham spoke about an hour and was listened to with marked attention by an appreciative and large audience.

The PRESIDENT, Mr. A. C. GOODELL and others, spoke in continuation of the subject, and expressed much interest in the communication, which was referred to the appropriate committee for publication in the Historical Collections of the Institute.

The new draft of the By-laws was passed through its second reading.



WEDNESDAY, MARCH 8, 1876.

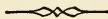
THIS evening, A. H. JOHNSON, M. D., gave the first of his series of lectures

ON THE RELATION OF MIND TO THE NERVOUS SYSTEM.

The lecture, which was mainly introductory, presented such anatomical details, illustrated by diagrams, as were necessary to the full comprehension of the lectures to follow. The diagrams alone, exhibiting the comparative anatomy of a dozen brains of different animals, furnished conclusive evidence for the speaker's theory, that mental power generally corresponds to the size and quality of the cerebrum. The doctor confined himself closely to facts, and wasted no time whatever over theories, and his lec-

tures will do much good by attracting attention to the subject, and furnishing indisputable facts.

Our conception of a human being, the lecturer said, necessarily embraces not only a mind with its characteristics, but also a physical frame with its attributes and accomplishments. The animal and the spiritual, the physical and the mental, whatever may be the degree of their distinctness, the measure of their independence, or the method of their connection, are indisputably united. "What God hath joined together, let no man put asunder." If one would understand the laws and workings of the human mind, he should study it in its connections with the body with which it is so intimately blended. It is in such a study that the lecturer proposed to offer a little help. An intelligent discussion of physiological facts presupposes some knowledge of anatomy. To insure a clear understanding of the facts with which we are especially to deal, it is necessary to somewhat particularly describe the structure and operations of the nervous system.



WEDNESDAY, MARCH 15, 1876.

THIS evening was given the second of Dr. JOHNSON'S series of lectures. In continuation of the physiological portion of his subject, the lecturer brought forward facts to show that the functions of the brain must largely depend upon the character of its blood supply. From these and facts adduced at the previous lecture it appears that some thought does not require us to suppose it to be the activity of a soul using the brain as an instrument.

He assumed that it was generally conceded, that the mental faculties of animals are not the manifestations of

a spiritual nature. Since the human brain, the special organ for intelligent life in animals, appears in a much more highly developed form in man, we are justified in considering it capable of producing mental phenomena of a higher grade and perfection. That we have, in addition to the physical mental faculties which we hold in common with the lower animals, a spiritual nature, which merges in, harmonizes with and controls them, and that this spiritual nature, together with the experience it gains through connection with our physical bodies is imperishable, is a truth of revelation.

The lecturer then copiously illustrated the automatic action of the brain, some of the conditions under which it occurs, and its effects in the production of illusions, through its action upon the sensorium (or ganglia at the base of the brain), as explained by Dr. Carpenter.

The inhibitory action of the brain, first demonstrated by Brown Sequard, was then explained and discussed with special reference to the inhibitory action of predominating thoughts.

Turning from the more strictly physiological portion of his theme, the lecturer sought first to remove objections to the facts he had presented, raised by those who fear that they may be used to remove moral responsibility by representing man as a mere product of material forces.

He showed that physiological facts do not and cannot deny the existence of a soul, nor do they account for the soul's origin or existence.

Whether a large number of our mental faculties have been prepared for us by the slow process of development and evolution, is immaterial.

The *product* and its *future* we esteem above the manner in which it came into existence.

REGULAR MEETING, MONDAY, MARCH 20, 1876.

MEETING this evening. The PRESIDENT in the chair. Records read.

Mr. JOHN ROBINSON gave an interesting and instructive lecture

ON FERNS.

Mr. Robinson has made the study of ferns a specialty, and has in his greenhouse an extensive collection, specimens from which were exhibited, much to the gratification of the attentive audience.

Mr. Robinson commenced by stating in what part of the vegetable kingdom the ferns stood, as compared with other plants, particularly those called flowerless, or Cryptogams. He said it was difficult to draw the line between the various orders of this great class of plants, and that they can hardly be separated from the flowering plants by any clear line, as the higher orders of the cryptogams approach so nearly the lower orders of flowering plants. Commencing with the spore, or seed, it was followed through all its stages of growth. The root, stem, and fronds were duly considered; the different modes of fruiting were spoken of and compared; and in closing an account was given of the natural distribution of ferns and the places most favorable to their production and growth.

The lecture was illustrated by excellent diagrams, and also by living specimens of tropical ferns.

Messrs. T. J. Hutchinson and William S. Hutchinson of Salem and M. M. N. Fiske of Ipswich were elected members.

The new draft of the By-laws having been read at two

previous regular meetings, passed its third reading and Dr. WM. NEILSON moved :

That the By-laws as now read be accepted and adopted as the By-laws of the Essex Institute, in lieu of the former Constitution and By-laws, which are consequently repealed.

This motion was then put in the form of a vote and was unanimously adopted.



WEDNESDAY, MARCH 22, 1876.

Dr. A. H. JOHNSON gave the third lecture of his course this evening. He said that anxieties arise lest any admission of a physical basis for much of mental life should destroy convictions of man's moral responsibility. Perversions of physiological facts may lead indiscreet persons into a ruinous fatalism. So may a perversion of the doctrine of divine leniency lead some into reckless living. Properly applied, the truths concerning the dependence of mental and spiritual power upon our physical organization more exactly define the limits of moral obligation. While corporeal states and measure of nerve power may determine possibilities and obligations in moral and religious experience, the origin of these bodily conditions enables us to determine when and where to attribute guilt.

A dyspepsia which poisons the whole conception of duty may have been innocently incurred, in which case it will excuse misconceptions of privilege and duty. But if excesses in food, or recklessness as to the time of eating, or a waste of energies have occasioned the disorder, here a point of responsibility for mental depression is found, and also a place indicated at which corrections for

the existing evil should be applied. If in the one case the fact of a morbid state of the body removes the obligation to feel courageous and hopeful, it also indicates in the other case the obligation to use conscientiously the means to maintain bodily health.

A full recognition and wise teaching of the anatomical and physiological relations of the mind, so far from weakening, will on the contrary strengthen the sense of moral responsibility. If by such learning, the range of our responsibility becomes limited in one direction it becomes increased in many others. With a more exact definition of the bounds of obligation, words of comfort and encouragement may change places with words of condemnation, but the moral struggle of the will against perverse inclinations will still go on, although its method may be changed.

Having answered some objections to a statement of the physiological relations of the mind, the lecturer then said that a study of the structure and functions of the nervous system led to conclusions which profoundly affect the relative moral value of various mental experiences. The emotions we have in common with the lower animals. They are the physical response to ideas which originate either from impressions received from external objects or from the mind. They are the excitation of the physical organization. This fact would seem to indicate the low order of emotional experiences in themselves considered. The emotions should not be confounded with the appetites on the one hand, nor the affections on the other. Appetites are desires for some bodily gratification. The affections lie as far above emotions as the appetites do below. Emotions are transient states. Affections are persistent associations of the mind with certain objects and inclinations towards these objects. The very nature of mere

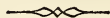
emotion reveals its moral worthlessness. In itself considered it has no more moral significance than muscular spasms. The morality of an emotion depends upon our choices to contemplate the object which calls it into exercise.

After eulogizing the power and value of the emotions in moral and religious reforms, the lecturer said that it was manifest that the temptation to abuse them has a manifold power. The proper order for moral and religious instruction is clearly indicated. We must address our efforts to give and guide thought fitted to excite feelings. To reverse this order is fraught with danger. It is not only to put a mere outward expression in the place of an internal reality, but it is to set loose a force whose intensity we do not know and the direction of whose working may be toward moral disaster instead of moral life.

Having explained and variously illustrated this statement, the lecturer then passed to the discussion of the mystical interpretations which certain morbid and startling disturbances of the mind had received from those who were ignorant of their physical origin. De Quincy's passionate love for the three-years-old daughter of Wordsworth and the visions of her form to which he was subject; Pascal's visions, his belief in their supernatural origin, and the ascetic life he led in consequence; Luther's interviews with Satan and the preposterous conclusions to which they led him,—were adduced to illustrate how nervous disturbances may lead to spectral illusions, while the last two instances show that dangers attend a too ready belief in the supernatural origin of remarkable mental experiences.

These experiences, when they occur in persons whose characters and piety we respect, if they have a reverent form, we are too much inclined to accept as the result

of an extraordinary divine influence. What appears so harmless when endorsed in certain hallowing connections, may, having once obtained high sanction, reveal a widely pernicious influence if its testimony be claimed under other circumstances.



WEDNESDAY, MARCH 29, 1876.

Dr. A. H. JOHNSON's fourth and last lecture on The Relation of the Mind to the Nervous System was delivered this evening.

The lecturer said that the state of the various tissues, fluids, viscera, and functions of the body are almost constant factors in mental products. The customary diet, the habitual practice in the use of food, may have quite as much influence as scholastic training in deciding for a life-time the spirit, methods, and direction in which mental powers shall be exerted. It is not needful to induce all the prominent symptoms of dyspepsia, before the mind will show that things so vulgar as the components of the daily meals are toning, and limiting, and almost dictating its action.

Indifference to literary pursuits, flagging enthusiasm in mental work, impatience in analytic thought, easy, superficial, inefficient study of facts and truths with which one is especially called to deal, are not always indications of defects in *direct* mental training; they may be symptoms of the oppression of various organs which are vainly seeking to rid the body of refuse and superfluous nourishment. Overwork in the digestive organs may produce a more or less complete inhibitory action upon the brain. A certain amount of nervous action is required to carry on the process of digestion.

The mind is likely to be trained according to the measure of elasticity and freedom allowed it after the general functions of the body have appropriated what nerve power they require. The *persistency* of bodily sensations may give them an educational power more potent in deciding spontaneous mental action than the drill of studies.

Among the agencies which very strikingly affect mental power and dispositions is the state of the air by which the body is surrounded. A warm temperature produces its repressive action upon the mind by the effect of heat upon the vasomotor system of nerves. Variations in the *purity* of the air, even more markedly than changes in its temperature, modify the action of the brain. It has been found that eloquent harangues were far from being as efficacious in dispelling apparent spiritual apathy and obduracy, as an abundant supply of fresh air. Drowsy brains, in ill-ventilated rooms, may blunt the points of the most piercing shafts of truth.

Physical exercise, other things being equal, so directly determines the quality, amount and pressure of blood in the head that its effects upon the development and action of the brain become very apparent. Beneficial as physical exercise proves itself to be, if it be too severe, continuous, or prolonged, it may arrest mental activity. So also intense efforts of the mind may arrest physical development. The proper co-ordination of these two departments of nervous life needs a careful consideration. For the highest equable development of both the physical and mental powers, their exercise must be properly proportioned. The special culture of either generally results in the impoverishment of the other. The undoubted healthful influence of gymnastic exercises and athletic sports both upon the mind and upon the body should not

be allowed to blind us to the evils arising from their abuse.

Having illustrated the dependence of mental activity upon the character and quantity of food, upon the purity and temperature of the air, and upon the amount and degree of muscular exercise, the lecturer said that did we realize how largely what we esteem our supremely intellectual life receives influential promptings from functional processes in obscure and despised organs of the body, we should not only be amazed, but be inclined to esteem physical training quite as important as the inculcation of ideas.

The lecturer then passed to speak of the physical basis for the controlling power of thought. Thoughts consume nervous force. Thoughts according to their intensity may have an inhibitory action on each other. If this be so it follows that the best conflict with one's evil propensities is indirect—that is, by immediate exercise of our faculties with thoughts and deeds conscience approves, rather than by attempts to increase the power of the will to rule, by drilling it in direct contests with vicious inclinations. If to expel evil we call in virtuous thoughts to occupy our mental energies, we intensify habits of mental action which will automatically assert their existence, and evil propensities will waste and weaken and perish from disuse.

This course of lectures has been listened to with deep interest, not for entertainment only, but principally to ascertain from a scientific stand-point the "mysterious connection between mind and matter" acknowledged and recognized by all, but capable of full comprehension by those only who are willing to patiently investigate the subject. Dr. Johnson is entitled to gratitude for the light he has thrown upon this important subject.

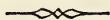
REGULAR MEETING, MONDAY, APRIL 17, 1876.

MEETING this evening. The PRESIDENT in the chair.
Records read.

S. H. Gookin of Salem was elected a resident member.

CHARLES H. HIGBEE gave a familiar lecture on Seaweeds, illustrating his remarks with lantern pictures under the charge of Mr. E. Bicknell. He also exhibited many beautiful and well preserved specimens of pressed seaweeds.

Adjourned.



REGULAR MEETING, MONDAY, MAY 1, 1876.

Meeting this evening. The PRESIDENT in the chair.
Records read.

On motion of Mr. A. C. GOODELL:

Voted, That the thanks of the Essex Institute be tendered to Dr. A. H. Johnson for his instructive and profoundly interesting lectures "On the Relation of the Mind to the Nervous System."

On motion of Mr. T. F. HUNT:

Voted, That the thanks of the Essex Institute is hereby tendered to the Ladies' Centennial Committee of Salem for their very generous gift in aid of making an exhibit of the history of Salem at the International Exhibition at Philadelphia, the present season.

Voted, That a committee be appointed to prepare a list of officers for the year ensuing, and to report a printed ballot at the annual meeting, May 15.

Messrs. William Neilson, James Kimball, William D.

Northend, James A. Gillis, and the chair, were appointed on the above committee.

Rev. Richard M. Hodges, of Cambridge, was elected a corresponding member.

Vice President F. W. PUTNAM occupied the evening with an extended discourse

ON THE ANCIENT PERUVIANS.

He stated that he had been led to a special study of the arts and culture of this prehistoric race by the very important and large collection of articles from the ancient graves, tombs and ruins in Peru which had recently come under his charge at the Peabody Museum of Archæology and Ethnology in Cambridge. This most valuable addition to the Museum was collected by Mr. Alexander Agassiz and his assistant, Mr. S. W. Garman, and presented to the Museum by Mr. Agassiz. In the same Museum are many vases and other articles from Peru, presented by the late Professor Louis Agassiz, and obtained during the Hassler Expedition. The Peabody Museum thus contains the most important collection of Peruvian antiquities in this country, and furnishes the means of comparison, not only between the nations of Peru and those of other countries, but also between the ancient peoples of different parts of Peru. For this purpose the large collection of human remains in the Museum, consisting of several hundred skulls and a number of perfect bodies, or "mummies," collected by Mr. Squier and Professor and Mr. Agassiz, is of the greatest importance, and from the study of these remains from different localities, and a comparison of the works of art from the corresponding places, it is evident that there were two contemporaneous tribes or peoples who differed in many respects, and it is also very probable that these

two tribes had come down to historic time, as the Quechua and Aymara tribes, though very much deteriorated and degraded since the Conquest. The Quechuas were probably formed by the union of various small tribes adopting a common language, which Forbes considers as probably founded on the older Aymara. From a study of the arts as shown by the specimens of weaving, etc., and especially of the pottery, it is hardly to be doubted that there was also a much higher development, at what is considered by Forbes as the ancient site of the Aymarás, about Lake Titicaca and especially at Tiahuanaco, all the pottery from this region being far superior in shape, design and execution, as well as generally of a different pattern, from that of the coast. Mr. Agassiz also arrived at the same conclusion from an inspection of the ancient ruins about the lake, and has stated that there is evidence of an intrusion of a later people at various places, as shown by two styles of architecture, one of which has been intruded upon the other. That these ancient people of the lake region were the ancestors of the Aymarás may be probable, but if so, even these Indians which have remained the purest and most isolated of all the Peruvian and Bolivian tribes, must have deteriorated, or have been disturbed in their development toward a higher civilization, even prior to the mythical Inca times. The lecturer here exhibited a large collection of photographs illustrating the several comparisons he had made, and showing the various kinds of architecture as exhibited by the ruins on the islands of Titicaca and Coati, and of several other places; also photographs of different localities in Peru, in order to show the various natural conditions now existing in the several regions whence the collections were obtained by Mr. Agassiz, to whose kindness he was indebted for the use of the photographs on this occasion. A number

of other photographs, taken from specimens presented to the Peabody Museum by Mr. Agassiz, and illustrating the several forms of mummies and the method of burial, were also exhibited. The bodies taken from the tombs, or *chulpas*, in the high Andes, several of which have their heads artificially elongated, were either entirely devoid of covering or had only a braided cord wound about them. Those from the burial places (graves in the sand) near the Pacific coast, at Ancon and Pisaqua, were enclosed with cotton, leaves, and various articles, in large bundles or bales of cloth, which were carefully corded and then covered with rushes.

Several crania from the different localities were exhibited, and their characteristics pointed out. Articles of clothing were shown, and also pieces of cloth which had been woven, net and embroidered in many, and often elaborate patterns, some of the pieces being entirely of cotton, others of cotton and wool, and still others probably all of wool. Various other articles were exhibited in order to make more apparent the several facts mentioned by the lecturer. An oil painting, by Mrs. David, was on the stage and was used by Mr. Putnam in illustrating his remarks. This picture had been made by the artist from a group of the articles taken from the graves at Ancon, and beautifully and accurately represented several of the choicest specimens brought from Peru by Mr. Agassiz.

As the special account of Mr. Putnam's Peruvian studies will be published in another connection, only a very general and brief notice of his lecture has been given above. The lecture was listened to throughout with marked attention by a large audience, and the various articles upon the table were afterwards examined with much interest.

The meeting then adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8.

SALEM, MASS., MAY, 1876.

No. 5.

One Dollar a Year in Advance. Ten Cents a Single Copy.

ANNUAL MEETING, MONDAY, MAY 15, 1876.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records read.

The SECRETARY announced the following correspondence :—

From S. F. Baird, Washington, May 8; E. F. W. Baker, Dorchester, Mar. 21; C. F. P. Baneroff, Andover, Mar. 6; A. Graham Bell, Boston, April 10; C. H. Bell, Exeter, N. H., Mar. 3, 14; Bresil, Commission Geologique de l'Empire, Feb. 16; Haydn Brown, West Newbury, May 8; Matthew Cooke, London, Feb. 11; A. W. Corliss, Camp McDowell, Arizona Terr., Feb. 16; F. M. Etting, Philadelphia, Penn., Mar. 4, 18, Apr. 10, 20; M. H. Fisk, Ipswich, May 6; A. C. Goodell, Jr., Mar. 5; Julia Ward Howe, Boston, Mar. 21; S. C. Jackson, State Library, Boston, May 9; O. A. Jenison, Lansing, Mich., Apr. 4, May 4; Kansas Academy of Science, Mar. 11; T. Cushing Ladd, Philadelphia, Apr. 5; J. Francis Le Baron, Boston, May 10; George B. Loring, Feb. 26; Madrid, Observatorio de, Feb. 21; E. S. Mills, Brooklyn, N. Y., Mar. 22; D. Moore, Salem Gas Light Co., May 4; Moscou, Société Imperiale des Naturalistes, Apr. 10; New York Academy of Science, Mar.; W. D. Northend, Apr. 15; Charles Palmer, Ipswich, Feb. 29; Paris, Société d'Anthropologie, Apr. 3; Francis Peabody, Boston, Apr. 6; F. B. Perkins, Boston Athenæum, May 10; J. D. Philbrick, Feb. 25, Mar. 21; Edward Porter, Lexington, Apr. 11; M. A. Porter, Treas. Ladies' Centen. Com., Salem, May 13; Abby S. Richardson, New York, Mar. 7; E. P. Robinson, Saugus, May 1, 9; John Robinson, Feb. 23; Leverett Saltonstall, Boston, Apr. 15, May 4; Sampson, Davenport & Co., Feb. 28, Apr. 1; Hon. Binney Sargent, May 11; Scribner, Armstrong & Co., New York, Mar. 1; Smithsonian Institution, Apr. 15; Richard S. Spofford, Washington, Apr. 11; Charles P. Thomp-

son, M. C., Washington, Feb. 26; C. O. Thompson, Worcester, May 8; A. R. Turner, Jr., Boston, Apr. 4; U. S. Bureau of Education, Mar. 24, Apr. 6; Oliver Warner, State Library, Boston, May 5; William H. Yeomans, Columbia, Conn., Mar. 9.

The LIBRARIAN reported the following additions :—

By Donation.

- ATWOOD, E. S. Miscellaneous volumes, 55.
 BELL, CHAS. H., of Exeter, N. H. Exeter in 1876. 8vo pamphlet.
 BOLLES, E. C. Miscellaneous pamphlets, 7.
 BOSTON, CITY OF. City Documents, 1875. 3 vols., 8vo.
 BUFFALO YOUNG MEN'S ASSOCIATION. Report. Feb. 28, 1876. 8vo.
 BURR, FEARING, of Hingham, Mass. The Town of Hingham in the Civil War, 1861-65. 1 vol., 8vo.
 CONANT, W. P., of West Newbury. The Triumphs of Temper. 12mo. 1804.
 COOK, JAMES P. Report of the Directors and Treasurer of the Maine Central Railroad Company, 1875. 8vo pamph.
 DANE, JOSEPH F. Memoir of Francis Dane. 26 copies.
 DRAKE, S. A., of Boston, Mass. Catalogue of the Library of S. G. Drake. Part I, II. 1876.
 FLANDERS, G. P., of Lowell, Mass. Municipal Register of Lowell for 1875. 1 vol., 8vo. Miscellaneous pamphlets, 4.
 FOOTE, HENRY W. King's Chapel and the Evacuation of Boston. 8vo.
 GARNETT, A. S., of —. Treatise on the Hot Springs of Arkansas. 8vo pamph.
 GILLIS, J. A. Addresses on the Death of J. B. Rice, A. Crocker, S. F. Hussey, Sam'l Hooper. Feb. 20, 1875. 1 vol., 8vo.
 GOODELL, JR., A. C. Miscellaneous pamphlets, 125.
 GOSTORTEN, ALEX., of St. Petersburg. Hebrew Book.
 GREEN, S. A., of Boston, Mass. Fifth Registration Report of Michigan, 1871. 1 vol., 8vo. Miscellaneous pamphlets, 54.
 HARTRANFT, JOHN F., of Philadelphia, Penn. Pennsylvania Archives, 2nd Series, Vol. III. 1 vol., 8vo.
 HARVARD UNIVERSITY, BUSSEY INSTITUTION. Bulletin, Pt. V, 1876. 8vo pamph.
 HIGBEE, CHAS. H. The Royal Blue Book, 1839. 1 vol., 12mo.
 HITCHINGS, E. H., of Boston, Mass. Elements of Chemistry. 1 vol., 8vo. Wayland's Moral Science. 1 vol., 12mo. Boston Directory, 1862-3. 1 vol., 12mo. Notices of Rare Tracts. 1 vol., 12mo.
 HOLDEN, N. J. The Commonwealth for, 1875.
 HOUGH, F. B., of Lowville, N. Y. Historical Sketch of the Mt. Holyoke Seminary, 1876. 8vo pamph.
 HUNT, T. F. Anniversary of the First Religious Society of Newburyport, 1725-1875. 8vo pamph.
 KIMBALL, JAMES. Miscellaneous pamphlets, 9.
 KINGSLEY, J. S. Catalogue of Dean Academy, 1875. 8vo pamph.
 LADIES' CENTENNIAL COMMITTEE OF EXETER, N. H. Exeter in 1876. 8vo pamph.
 LEE, JOHN C. Commercial Bulletin.
 LOWELL, OLD RESIDENT'S HISTORICAL ASSOCIATION. Contributions of, No. II. Feb., 1876. 8vo pamph.
 MCGEARY, JAMES. The Medium and Daybreak, Vol. 6, 1875. 1 vol., royal 8vo 1875-1876. 23 numbers.
 MORSE, E. S. The Orient. 15 numbers.
 PAINE, NATH'L, of Worcester, Mass. Portraits and Busts in Public Building at Worcester, Mass. 8vo pamph.

PRESCOTT, JEREMIAH. Report of the Manager of the Troy & Greenfield Railroad and Hoosac Tunnel. Dec. 31, 1875. 8vo pamph.

POOLE, W. F., of Chicago, Ill. The Ordinance of 1787 and Dr. Manasseh Cutler. 8vo.

PUTNAM, F. W. New York Tribune, Feb., Mar., Apr., 1876.

SALEM, CITY OF. City Documents, 1875. 1 vol., 8vo.

STEVENS, ANNA C. The Climate and Disease of America during the Revolution.

THOMPSON, CHAS. P., M. C. Addresses on the Death of J. B. Rice, etc., Feb. 20, 1875. 1 vol. Addresses on the Death of Wm. A. Buckingham, Feb. 27, Mar. 1, 1875. 1 vol. Mineral Resources West of Rocky Mountains. 1 vol. Revised Statutes relating to District of Columbia. 1 vol.

TOWNE, W. B., of Milford, N. H. Historical Address at Amherst, 1874. 8vo.

TUCKER, JONATHAN. Miscellaneous papers, 40.

U. S. DEPARTMENT OF INTERIOR. Department of the Interior. Circulars of Information of the Bureau of Education. Nos. 1-8. 1875.

U. S. PATENT OFFICE. Official Gazette. Mar. 28, Apr. 4, 11, 18, 1876.

WATERS, J. LINTON. Service and Hymn Books. Miscellaneous pamphlets, 12.

WHIPPLE, GEO. M. Biographical and Genealogical Sketches of Wm. Blackstone. 8vo pamph. To-Day. 1 vol., 8vo.

WILDER, MARSHALL P., Boston. American Pomological Session, 1875. 4to.

WORTHEN, A. H., of Springfield, Ill. Geological Survey of Illinois, Vol. VI.

By Exchange.

AMERICAN ANTIQUARIAN SOCIETY, WORCESTER. Proceedings of. Oct. 21, 1875.
BERLIN, VEREINES ZUR BEFORDERUNG DES GARTENBAUES. Monatsschrift-Jahrg. xviii, 1875.

BOSTON SOCIETY OF NATURAL HISTORY. Proceedings of. Vol. xviii, pt. 11. June-Jan., 1875-76, and Sigs. 13, 14, Feb., 1876. Memoirs, Vol. ii, pt. iv, Apr., 1876.
BOWDOIN COLLEGE. Catalogue of, 1875-76.

CANADIAN INSTITUTE. Journal. Apr., 1876.

CHERBOUGH, SOCIÉTÉ NATIONALE DES SCIENCES NATURELLES DE. Memoires, Tome xviii. 1874. 1 vol., 8vo.

DRESDEN, NATURWISSENSCHAFTLICHEN GESELLSCHAFT "ISIS" IN. Sitzungsberichte. Jahrg., 1875.

DUBLIN, ROYAL IRISH ACADEMY. Transactions of. Vol. xxiv, pts. ix, xvi, xvii, 1870. Vol. xxv. 1872-75. Proceedings of. Vol. I, Ser. II. 1871-73. Nos. 5-10. Vol. II, Series II. 1875. Nos. 1-3.

FRANKFURT A. M. SENCKENBERGISCHE NATURFORSCHENDE GESELLSCHAFT. Bericht. 1873-74. 8vo pamph. Abhandlungen, Band ix, Heft. iii, iv. 1874-75.

The annual reports of the Secretary, Treasurer, Curators and Standing Committees were read and accepted, and from them the accompanying

RETROSPECT OF THE YEAR

has been compiled, presenting the work of the Institute, in its various departments, since the last annual meeting.

MEMBERS.—Changes occur in the list of our associates

by the addition of new names and the withdrawal of some by resignation, removal from the county or vicinity, and by death. Fifty-six resident members have been elected. The present number is five hundred and fifteen. Fourteen members have died, all having passed the meridian of life, and eight the allotted period of three score years and ten. Some of them had been connected with the Institute from its organization.

Samuel Gardner Drake, born at Pittsfield, N. H., Oct. 11, 1798; died in Boston, June 14, 1875. Son of Simon and Love Muchamore (Tucke) Drake. At the age of eighteen he went as a clerk to his uncle's store in Boston. Taught school several years in Loudon, N. H., and in New Jersey. In 1828 began business as a bookseller, and except about a year and a half spent in Europe, was identified with that business in Boston until his decease. In July, 1830, he established the first antiquarian bookstore in Cornhill, Boston. This store soon became the resort of the literary men of that day, Bancroft, Hildreth, Prescott, Sparks, Everett, and others well known, and became a kind of literary exchange. In 1845 five gentlemen, one of whom was Mr. Drake, originated the New England Historic-Genealogical Society, whose building is now on Somerset street, Boston. He originated the New England Historical and Genealogical Register, the first number of which was issued in January, 1847. For the first fourteen years, 1847 to 1861, he was the publisher, and a large part of the time, editor of the Register. His best known works are "Book of the Indians," "History and Antiquities of Boston," "Founders of New England," etc. He possessed a large library of 15,000 volumes and 30,000 pamphlets directly or collaterally relevant to American History. He had been President of N. E. Hist. Gen. Society and of the Prince Society, and was

also connected with many other historical societies. He was elected a member Feb. 14, 1849.

Charles Wentworth Upham, son of Judge Joshua Upham, a royalist in the Revolution, born at St. John, N. B., May 4, 1802, graduated at Harvard College in 1821, ordained at Salem Dec. 8, 1824. Colleague with Rev. Dr. John Prince of the First Church. Relinquished the ministry Dec. 8, 1844. At different times editor of *Christian Review* and *Christian Register*. Mayor of Salem in 1852. A member in Massachusetts House of Representatives, of which he was speaker, also of the Massachusetts Senate, and its president in 1857 and 1858. Representative in U. S. Congress in 1853-56, and of the Massachusetts Convention in 1853. In 1828 he published "Letters on the Logos," "Lectures on Witchcraft" in 1831, "Life of Sir H. Vane" in 1835, "Life of J. C. Fremont" in 1856, "Salem Witchcraft," in 1867. He was a frequent contributor to leading reviews and magazines and author of several orations, pamphlets, etc. He was always interested in the various institutions of Salem promotive of education and culture. He contributed several papers to the Historical Collections of the Institute, among which may be mentioned *Memoirs of George A. Ward*, *Francis Peabody* and *Daniel P. King*. His last great work was the completion of the "Life of Col. T. Pickering" (which was commenced by Octavius Pickering, who prepared and caused to be printed the first volume), in 4 vols., 8vo, a valuable contribution to history and a just tribute to the memory of a patriot of the Revolution, who was a friend and counsellor of Washington, both on the field and in the cabinet. Mr. Upham died in Salem on Tuesday morning, June 15, 1875. His wife, Ann Susan, daughter of the late Rev. Dr. Abiel Holmes of Cambridge, and two sons, William Phineas and Oliver Wen-

dell Holmes, survive. He was elected a member of Essex Historical Society March 1, 1825.

Winslow Lewis, of Boston, widely known in many different walks of life, died on Tuesday night, August 3, 1875, at the house of his son, Dr. George H. Gay in Grantville. He was son of Winslow and Elizabeth (Greenough) Lewis and was born in Boston, July 8, 1799. Graduated at Harvard in 1819, studied medicine with Dr. John C. Warren and took his degree in 1822, afterwards pursued his studies with the celebrated Abernethy of London and Dupuytren of Paris. On his return he commenced practice in Boston, and soon rose to distinction. He was consulting surgeon in the Massachusetts General Hospital, and during a successful, extensive and varied practice of thirty-five years educated hundreds of young men, many of whom are now eminent in their profession. He was a scholar, and had an interest in books and the best literature. He translated from the French "Gall on the Brain," in 6 vols., edited an edition of Paxton's Anatomy, and gave many addresses before literary and scientific societies. He had been President of New England Historic-Genealogical Society and of the Boston Numismatic Society. Aside from the profession, his great interest was in Free Masonry. He filled every post of service and honor that the order could bestow. He married, Feb. 22, 1828, Emeline Richards, daughter of Capt. Benjamin Richards, of New London, Conn. He was elected a member Feb. 6, 1865.

John K. Wiggin, well known as a collector of antiquarian and historical books, and as a publisher, was born in Wakefield, N. H., August 5, 1825, and died in Boston, August 20, 1875. He was elected a member Oct. 26, 1859.

Increase Allen Lapham died suddenly at Milwaukee,

Wisconsin, Sept. 14, 1875. He was born at Palmyra, N. Y., March 7, 1811. At one time a civil engineer employed on the Welland Canal and also on the canal around the Falls of the Ohio at Louisville, Ky.; from 1833-1835 Secretary of the Board of Canal Commissioners of Ohio. In 1838 he removed to Milwaukee, where he resided until his decease. In 1862 he was chosen President of the Wisconsin Historical Society. In 1873 he was appointed State Geologist and began making a thorough geological and topographical survey of the State. He was a prolific writer, having been a frequent contributor to scientific journals and other publications. He was elected a member of Essex County Natural History Society, July 13, 1836.

William Prescott, son of William and Deborah (Welch) Prescott, born at Sandbornton, N. H., Dec. 29, 1789. In early life, a farmer. In 1815 received the Medical degree from Dartmouth Medical School, and commenced the practice of the profession at Gilmanton, N. H., where he remained eighteen years. In December, 1832, he removed to Lynn, Mass., and in September, 1845, to Concord, N. H. In 1852 he relinquished active professional labor for the purpose of devoting himself to those literary, scientific, genealogical and antiquarian studies for which he had a decided taste. He died at his home in Concord, Oct. 18, 1875. During his residence in Lynn, he was present and took an active part at the first meeting of the Essex County Natural History Society, Dec. 14, 1833, and was one of the persons named in the Act of Incorporation. For ten years he was one of the curators of the Society, and at the time of his removal from the State one of its Vice Presidents. He delivered a lecture before the Natural History Society in 1838, which was printed in the Journal, on the Minerals of the South-

ern Part of Essex County. His great work, to which he gave many years of labor, is "A Memoir of the Prescott Family," in 1 vol., 8vo.

William Ives, eldest son of Capt. William and Mary (Bradshaw) Ives, was born in Salem, Feb. 15, 1794. He served an apprenticeship in the office of the "Salem Gazette" with the late Thomas C. Cushing. In January, 1823, he commenced the "Salem Observer," which assumed a permanent condition under his management. He was also for many years well known as the senior partner of the old firm of W. & S. B. Ives. He retired several years since and has passed the interval in the enjoyment of social life and in reading. He died at his residence in Salem, Dec. 12, 1875. An original member of Essex County Natural History Society, 1833.

John Merrill Bradbury died at his residence in Ipswich on Tuesday, March 21, 1876. He was the son of the late Ebenezer Bradbury of Newburyport, formerly State Treasurer, and was born in that city Oct. 29, 1818. He was three years a student in Dickenson College, but did not graduate; teacher for several years in Newburyport, then chief clerk in the Treasury Department of the State, and afterwards connected with a banking firm in Boston; retired from business in 1866 with a competency. In 1868 went to Europe and remained there several years. Mr. Bradbury had a fondness for antiquarian research, and devoted his leisure and time to the history and genealogy of many old families of Essex County. He was elected a member Dec. 16, 1873.

Josiah Stickney. This well known and for many years active merchant in the metropolis, died at his residence, on the banks of Charles River, Watertown, Monday, March 27, 1876. He was the son of William and Abigail (Walker) Stickney, and was born at Grafton, Vt., Jan.

6, 1789. He removed to Boston at an early age, and commenced business near the old "Bite Tavern," and was very successful. He was afterwards interested in sugar refinery, railroads, and other business operations, and for many years Director of the Western, Concord, and Connecticut & Passumpsic River Railroads; also Director and President of Market Bank. Mr. Stickney was also prominent as an horticulturist, and long an efficient and interested officer of the Massachusetts Horticultural Society. A contributor to the exhibitions, his grounds in Watertown being always kept in a high state of cultivation, and furnishing the choicest specimens of fruits and flowers. He was elected a member Sept. 4, 1865.

Ebenezer Putnam, son of Ebenezer and Sarah (Fiske) Putnam, was born in Salem, Sept. 6, 1797, graduated at Harvard in the class of 1815, died at Salem, Apr. 3, 1876. In early life he was a teacher in the family of Nathan Read in Maine and also in a family in Virginia. He afterwards spent some years in mercantile life at the west. Postmaster of Salem from 1829 to 1840. He was interested in political history and in the study of the laws which govern states and nations. He also devoted much attention to horticulture and in some departments was a large and successful grower. Associated with his brothers he largely contributed to the Horticultural Exhibitions under the auspices of the Institute. He was elected a member of the Essex Historical Society May 12, 1837.

William E. Doggett, of Chicago, died at Palatka, Florida, April 3, 1876, where he had gone on account of failing health. He was born at Freetown, Mass., Nov. 20, 1820. He went to Chicago in 1846, and established the boot and shoe house of Ward, Doggett & Co. This connection was maintained until the decease of Mr. Ward in 1856. The present firm of Doggett, Bassett & Hills

has continued from that to the present time. In addition to this connection he was largely identified with the trade, commerce, benevolent institutions and progress of Chicago. As Vice President of the Merchant's Savings, Loan & Trust Company, and an officer of the Academy of Science, Chicago Historical Society, Young Men's Library Association, Athenæum, etc., he contributed very materially to the success of these Institutions. In 1858 he married Miss Kate Newell, a lady well known as a writer and lecturer, who survives him. Some ten or twelve years since, during his summer residence for several seasons at Swampscott, he associated himself with the Institute, attended the field meetings and took a lively interest in the promotion of its objects. He was elected a member July 17, 1865.

MEETINGS.—During the summer three *Field Meetings* have been held. The first at the Chebacco House, in Hamilton, June 3, 1875. The woods and ponds in the vicinity are very enjoyable for excursions and meetings of this character. Communications were made by F. W. Putnam, on Shell Heaps and Indian Relics at West Newbury; A. Osgood, Notice of the Mining Lands at Newbury; J. H. Stevens, on the Cane Brakes in Louisiana; L. H. Upton, List of Plants found in Flower. *Second*, at Byfield, July 1, 1875, the seat of Dummer Academy and abounding in interesting historical associations. W. D. Northend spoke of Byfield and the Academy; and J. Spofford, F. W. Putnam, John Robinson, Haydn Brown, Amos Noyes, and S. J. Spaulding offered remarks. *Third*, July 27, 1875, at Concord, Mass. The interest in this historic old town inspired by the events of the 19th of April, 1775, was freshly awakened by the commemoration of the present year. Remarks by E. R.

Hoar, E. S. Morse, F. W. Putnam, E. C. Bolles, G. Reynolds, and others.

Regular Meetings. Twenty-one have been held at the rooms, usually on the first and third Monday evenings of each month. The papers read and lectures delivered have proved exceedingly instructive. The following may be specified:—W. P. Upham, on the Settlement of Rev. S. Skelton, and on the Siege of Boston; James Kimball, on Indian Utensils; A. Graham Bell, on Visible Speech; G. F. Wright, on Indian Ridge and its Continuation in Andover; S. C. Oliver, on the Instinct and Intelligence of Animals; George M. White, on Pottery; John Robinson, Addenda to the Ferns of Essex County; E. S. Atwood, on the Manufacture of Silver Plated Ware; S. G. W. Benjamin, on the Theory and Practice of Art; N. H. Chamberlain, on the Way of making Orators; C. H. Higbee, on Algæ; F. W. Putnam, on the Ancient Race of Peru.

LECTURES AND CONCERTS.—A course of four very able and instructive lectures on the Relation of the Mind to the Nervous System were given by Dr. Amos H. Johnson of this city. The lectures were attended by a large and appreciative audience. The receipts of the entire course were generously given to the Institute by the lecturer.

Under the direction of the Curator of music, four concerts were given, which proved highly successful. 1st. On Monday evening, Nov. 22, by Mr. B. J. Lang and Miss Ita Welsh; 2nd. On Monday evening, Dec. 13, by Mrs. J. W. Weston, Messrs. G. W. Sumner and George Bridgham; 3d. On Wednesday evening, Dec. 29, by Messrs. August and Wulf Fries and Arthur W. Foote; 4th. Monday evening, January 10, by Mrs. Edward

Kemble, Mrs. George Upton, Dr. S. W. Langmaid and Mr. Arthur W. Foote.

ART EXHIBITION.—Opened at the rooms of the Institute on Tuesday, Nov. 9, and closed Wednesday the 17th, under the skilful and tasteful direction of the Curator of painting and sculpture. It was the generally expressed opinion that this was one of the most pleasing and interesting exhibitions ever given by the Institute. It was largely attended and the display of pictures was exceedingly creditable to the taste of our citizens, who cheerfully loaned their works of art, many of which were extremely valuable. The main hall was devoted to the display of oil paintings, water colors, pen and ink, and pencil sketches. The eastern anteroom was occupied by the display of bronzes, porcelain and pottery. This was the first ceramic exhibition in Salem.

LIBRARY.—The additions by donations and exchange during the year were as follows :—

<i>Donations.</i>			
Folios,	2	Pamphlets and Serials, . . .	3,065
Quartos,	17	Total of bound volumes, . .	545
Octavos,	412		—
Duodecimos,	97	Total of Donations,	3,610
Sexdecimos,	17		
	—		
Total,	545		
<i>Exchanges.</i>			
Quartos,	6	Pamphlets and Serials, . . .	1,191
Octavos,	315	Total of bound volumes, . .	364
Duodecimos,	43		—
	—	Total of Exchanges,	1,555
Total,	364	Total of Donations,	3,610
			—
			5,165
			43
<i>By Purchase,</i>			
Quartos,	41		—
Duodecimos,	2	Total of Additions,	5,208
	—		
	43		

Of the total number of pamphlets and serials, 1,824 were pamphlets, and 2,432 were serials.

The donations to the Library for the year have been received from one hundred individuals and twelve societies and departments of the General and State Governments. The exchanges from ninety-three societies and incorporate institutions, of which sixty-one are foreign; also from editors and publishers.

The library has been carefully examined and all the books have been put in good order. The number of exchanges has increased during the year. Large additions have been made to the valuable and full collection of directories and also to the public documents.

The Assistant Librarian has commenced the preparation of a catalogue of the books in the upper hall, alphabetically by authors. This in its first rough form is now completed, except only the letter W. This will furnish a basis for a finished catalogue hereafter. The Secretary has arranged, catalogued, and placed in convenient folios for easy reference, the large number of maps, plans, engravings and prints of a miscellaneous character. The musical library has been rearranged, and the large collection of programmes, play bills, and musical catalogues have been placed in folios.

The collection of manuscripts has been placed in glass cases in the eastern portion of the gallery of the western anteroom, and are partially put in order. It is intended to have an index which shall render access to them more convenient.

MUSEUM.—Many valuable specimens in natural history have been given during the year, and are on deposit with the Trustees of the Peabody Academy of Science, in ac-

cordance with previous arrangements. These have been reported at our meetings, and have been duly acknowledged to the several donors. In addition to these several interesting specimens of an historical character have been arranged in the rooms of the Institute, and contribute very much of interest and value to the antiquarian and historical portion of the museum. To the Technological department several series of specimens have been added.

PUBLICATIONS.—The BULLETIN has been continued, and gives full reports of the doings of the Institute, and abstracts of papers read at the meetings. The HISTORICAL COLLECTIONS, Vol. xiii, No. 2, has been printed.

BY-LAWS.—The revised By-laws, adopted in March, will soon be printed for circulation among the members.

EXCURSIONS.—Two excursions arranged by members and friends of the Institute, one by boat to the Isle of Shoals, the other by rail to the White Mountains, were largely attended. They were planned to promote the social objects of the Institute and were quite satisfactory in the results.

CENTENNIAL EXHIBITION.—The Directors of the Institute, in compliance with several official circulars and personal letters from the Chief of the Historical Department of the Centennial Exhibition at Philadelphia, voted to make an exhibit of specimens illustrative of the history of Salem. Six portraits of persons noted in the early history, and about one hundred articles of historical interest, also an album containing one hundred and twenty

photographs illustrating our city, have been carefully packed for sending to Philadelphia under the personal care of an officer of the Institute.

FINANCIAL.—The Treasurer's Report shows the following receipts and expenditures during the year.

DEBITS.

General Account.

Athenæum, Rent, etc., \$350.00; Salaries, \$782.00; Coal, \$160.00, . . .	\$1,292.00
Express and Postage, \$64.67; Insurance, \$40.00, . . .	104.67
Binding, \$20.00; Gas, \$161.53; Publications, \$950.93, . . .	1,132.46
Sundries, \$86.77; Expenses of Excursions, \$2,077.86 . . .	2,164.63
Department of Art, 1874, 1875, \$238.24; Stationery, 19.23, . . .	257.47
Balance of last year's account, . . .	89.58
Balance in hands of Treasurer, . . .	65.85

Historical.

Books, . . .	158.00
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Natural History and Horticulture.

Books, \$3.93; Sundries, \$12.50, . . .	16.43
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Ditmore Fund.

Chicago City Bond with accrued interest, . . .	1,058.22
	<u>\$6,339.31</u>

CREDITS.

General Account.

Dividends Webster Bank, . . .	15.00
Assessments, \$1,241.00; Publications, \$90.21, . . .	1,331.21
Sundries, \$201.43; Excursions, \$2,316.10, . . .	2,517.53
Salem Athenæum, one-half coal and janitor, . . .	173.23
Lectures, \$165.05; Art Department, \$5.80, . . .	170.85
Due to late Treasurer and included in a note passed to him Dec. 11, 1875, . . .	615.49

Historical.

Dividends Naumkeag Bank, . . .	18.00
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Natural History and Horticulture.

Dividends P. S. & P. R. R., . . .	16.00
Dividends Lowell Bleachery, . . .	32.00

Davis Fund.

Coupons Burlington and Missouri R. R., . . .	240.00
Coupons Dixon, Peoria and Hannibal R. R., . . .	140.00

Ditmore Fund.

Received from Executor, . . .	1,000.00
Coupons Chicago City Bond, . . .	70.00
	<u>\$6,339.31</u>

The following Officers were then elected, until others shall be chosen in their stead:—

PRESIDENT:
HENRY WHEATLAND.

Vice-Presidents:

ABNER C. GOODELL, Jr. WILLIAM SUTTON.
FREDERICK W. PUTNAM. DANIEL B. HAGAR.

Secretary: *Treasurer:*
GEORGE M. WHIPPLE. DAVID PINGREE.

Auditor: *Librarian:*
RICHARD C. MANNING. WILLIAM P. UPHAM.

CURATORS:

<i>History</i> —JAMES KIMBALL.	<i>Bôtny</i> —JOHN ROBINSON.
<i>Manuscripts</i> —W. P. UPHAM.	<i>Zoology</i> —EDWARD S. MORSE.
<i>Archæology</i> —F. W. PUTNAM.	<i>Horticulture</i> —CALEB COOKE.
<i>Numismatics</i> —M. A. STICKNEY.	<i>Painting & Sculpture</i> —T. F. HUNT.
<i>Geology</i> —ALPHEUS S. PACKARD, Jr.	<i>Technology</i> —EDWIN C. BOLLES.

COMMITTEES:

Finance:

JOHN C. LEE. JAMES UPTON. JAMES O. SAFFORD. H. M. BROOKS.

Library:

CHAS. W. PALFRAY. JOSEPH G. WATERS. HENRY F. KING.
GEORGE F. FLINT. WM. NEILSON.

Publications:

ABNER C. GOODELL, Jr. EDWARD S. ATWOOD.
EDWIN C. BOLLES. JAMES KIMBALL.

Lectures:

WILLIAM D. NORTHEED. A. H. JOHNSON. F. W. PUTNAM. A. L. HUNTINGTON.

Field Meetings:

ALLEN W. DODGE, Hamilton.	FRANCIS H. APPLETON, Peabody.
GEO. COGSWELL, Bradford.	LEWIS N. TAPPAN, Manchester.
GEORGE D. PHIPPEN, Salem.	FRANCIS H. JOHNSON, Andover.
GEORGE PERKINS, Salem.	R. S. SPOFFORD, Newburyport.
E. N. WALTON, Salem.	N. A. HORTON, Salem.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8. SALEM, MASS., JUNE, JULY, 1876. No. 6.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, JUNE 5, 1876.

MEETING this evening. Vice President F. W. PUTNAM in the chair. Mr. T. F. HUNT was elected Secretary, *pro tem*. Records of the preceding meeting were read.

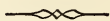
Mr. Putnam exhibited and made remarks on a number of ancient gold images recently secured by the Peabody Museum of Archæology in Cambridge. The articles were principally from graves near Bogota, New Grenada, and were particularly interesting in connection with the mythology of the ancient race by whom they were made.

J. F. Lougee of Salem was elected a resident member.

REGULAR MEETING, MONDAY, JUNE 19, 1876.

MEETING this evening. The PRESIDENT in the chair. Mr. F. W. PUTNAM was requested to act in the absence of the Secretary. Records of the preceding meeting were read.

The presentation of an interesting collection, from Alfred Peabody of Salem, suggested remarks from several members and occupied the hour of the meeting. This collection consisted of specimens, in fine condition, of skins of seven species of birds from Madagascar. Also the horns of a gemsbok from Madagascar, and several botanical specimens from the Cape of Good Hope.

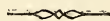


REGULAR MEETING, MONDAY, JULY 3, 1876.

MEETING this evening. The PRESIDENT in the chair. Records of the preceding meeting were read.

Messrs. Charles Henry Hart, Frank M. Etting and Samuel Chew, of Philadelphia, were elected corresponding members.

Helen J. Almy of Salem was elected a resident member.



FIELD MEETING AT BEACHMONT, SATURDAY, JULY 22, 1876.

THE first field meeting of the season was held this day at Beachmont on the line of the Boston, Revere Beach & Lynn Railroad. The party left Salem at 9.20 A. M., and Lynn at 10.00, and proceeded to the Ocean House on the eastern end of the Revere Beach, where two hours were pleasantly spent in rambling over the fine beach and enjoying the refreshing sea breeze. At noon the cars were taken for Beachmont, the place of rendezvous, near the western end of the beach. This remarkable elevation rises directly above the southern shore of Lynn Bay. On its eastern extremity the rollers break as they come in from the open sea. The view from the summit is

varied and beautiful. Boston, Charlestown, Chelsea, Malden, Saugus, Lynn, Swampscott and Nahant in all their diversified beauties, while the blue expanse of the ocean with its numerous sail and the occasional passing steamer, form a grand panorama that is seldom equalled. Nestling near the southern base is the little town of Winthrop, with its rural and pastoral appearance in striking contrast to its surroundings, which are essentially marine. This locality is well adapted for seaside residences, and it is to this hill that Dr. Petermann alluded in his recent address before the American Geographical Society, as furnishing the most delightful view he had seen in America. At the summit a building has been erected, which was the headquarters for the day, where the lunch was partaken and the afternoon session was held.

At 2.30, P. M., the meeting was called to order by the PRESIDENT. Mr. F. W. PUTNAM was requested to act as Secretary in the absence of that officer. Records read.

The SECRETARY announced the following correspondence:—

From E. P. Ainsworth, June 3; H. J. Almy, July 12; F. H. Appleton, Lynnfield, May 25, July 10; E. P. Boon, New York, May 30, June 13; Henry Breed, Lynn, July 14; S. Chew, Germantown, Penn., July 11; D. P. Corey, Boston, June 27; Frank M. Etting, Philadelphia, May 15, 24; D. B. Hagar, May 25; Charles Henry Hart, Philadelphia, July 10; Samuel Henshaw, Boston, June 20; A. L. Huntington, June 5; O. A. Jenison, Lansing, Mich., June 30; F. H. Johnson, Andover, May 30; S. Kimball, Marblehead, July 19; I. P. Langworthy, Boston, June 20; Jacob Leamon, Condit, Ohio, May 15; G. B. Loring, July 14; Samuel W. McDaniel, Cambridge, May 15; George H. McLean, Washington, Del., July 19; A. S. Packard, Jr., July 20; E. H. Payson, June 9; David Pingree, May 22; C. P. Preston, Danvers, June 26; P. D. Richards, Philadelphia, May 29, July 20; Hor. Binney Sargent, June 1; C. O. Thompson, Worcester, May 17; G. M. Whipple, Philadelphia, May 19; G. F. Wright, Andover, June 20; American Social Science Association, Boston, May 31; Augsburg, Naturhistorischen Verein in, Feb. 1; Bamberg, Naturforschende Gesellschaft; Basel, Naturforschende Gesellschaft, Feb. 22; Berlin, Die Gesellschaft Naturforschender Verein, May 22; Boston Society of Natural History, July 14; Brunn, Naturforschende Verein, Feb. 14; Buffalo Historical Society, May 22, June 20, July 1; Calcutta, Geological Survey of India, Dec. 1; Chemnitz, Naturwissenschaftliche Gesellschaft, Apr. 1; Danzig, Naturforschende Gesellschaft, Apr.

15; Edinburgh, Royal Society, Feb. 21; Erlangen, Physikalisch-medicinische Societat, Apr. 8; Freiburg, Naturforschende Gesellschaft, Mar. 17; Genève, Société de Physique et de Histoire Naturelle, Jan. 25; Lowell Bleachery, July 7; Marburg, Gesellschaft zur Beforderung der Gesamnten Naturwissenschaften, April; New England News Co., July 28; New Jersey Historical Society, June 19, 30; New York, Academy of Sciences, June 19; New York Historical Society, June 19, 30; Ohio Historical and Philosophical Society, May 22, June 19, July 1; Pennsylvania Historical Society, June 17; Philadelphia Academy of Natural Sciences, June 28; Rhode Island Historical Society, July 19; Salem Hospital, June 29; U. S. Office of Med. Statistics, May 25; Vermont Historical Society, May 22, July 12; Waterbury, Bronson Library, June 1; Wien, K. Akademie der Wissenschaften, Dec. 27; Wien, K. K. Zoologische-botanische Gesellschaft, March; Worcester Lyceum and Natural History Association, May 24; Yale College, July 15.

The LIBRARIAN reported the following additions:—

By Donation.

APPALACHIAN MOUNTAIN CLUB. Appalachia. June, 1876. 8vo.

BOLLES, E. C. Homage to the Book. 1 vol., 12mo. The Pilgrim Series Question Book. 3 vols., 12mo. National Series of Sunday School Lessons. 2 vols., 12mo. Miscellaneous pamphlets, 22.

CARPENTERS' COMPANY, PHILADELPHIA. By-Laws, Regulations and Rules, etc. 1 vol., 8vo. Phila., 1873.

FOSTER, W. H. Miscellaneous pamphlets, 18.

GOODELL, JR., A. C. Miscellaneous pamphlets, 139.

GREEN, S. A., of Boston. Miscellaneous pamphlets, 25.

HUMPHREYS, A. A., of Washington, D. C. U. S. Geological Surveys. Vol. 3, 1876. 1 vol., 4to.

HUNT, T. F. History of Independence Hall, by F. M. Etting. 1 vol., 8vo. 1876. Celebration of the Centennial Anniversary of the Evacuation of Boston by the British Army, March 17, 1776, by Geo. E. Ellis. 1 vol., 8vo.

JOHNSON, THOMAS H. Salem Post for 1873, 1874, 1875.

KIMBALL, JAMES. Cape Ann Advertiser, Mar., Apr., May, 1876.

KINGSLEY, J. S. Hand-Book of the Kansas State Agricultural College. 8vo pamph. 1874.

MACK, ESTHER C. Dwight's Journal of Music, 1862-1872. 6 vols., 4to.

MACK, WM. Miscellaneous volumes, 31. Miscellaneous pamphlets, 60.

NEWHALL, THOMAS A., Germantown, Penn. List of Emigrants to America, 1600-1700. 1 vol., small 4to. Memoirs of the Historical Society of Penn., Vol. viii. 1 vol., 8vo. History of Essex Co., by Phillip Morant. 2 vols., folio. London, 1768. Reprint, 1816.

NOURSE, DORCAS C. Oliver Optics for 1870, 1871, 1872, 1873, 1874.

OSGOOD, CHAS. S. Eastern Railroad Investigation, 1876. 1 vol., 8vo. Boston and Albany Railroad Investigation, 1876. 1 vol., 8vo. Briggs' Investigation, 1876. 1 vol., 8vo.

PALFRAY, C. W. Miscellaneous pamphlets, 8.

PEABODY, ALFRED. History of the Pacific Guano Company. 8vo pamph.

PERKINS, ALBERT C., of Exeter. N. H. Catalogue of Officers and Students of Phillips Exeter Academy, 1875-76. 12mo.

PUTNAM, F. W. New York Tribune, Apr., May, 1876.

STORY, AUGUSTUS. Kastner's Archiv für die gesammte Naturlehre. 19 vols., 8vo. Archiv für Chemie und Meteorologie. 9 vols., 8vo. 18 other volumes. Also Miscellaneous pamphlets, 95.

TUCKER, JONATHAN. Miscellaneous pamphlets, 6.

U. S. PATENT OFFICE. Official Gazette, Mar. 28, Apr. 4, 11, 18, May 9, 30, June 6, 27.

WATSON, CAROLINE A. Holy Bible. 1 vol. London, 1599.

By Exchange.

AMERICAN ACADEMY OF ARTS AND SCIENCES, BOSTON. Proceedings. 1875-76. 8vo.

AMERICAN PHILOSOPHICAL SOCIETY. Proceedings. Vol. xvi. Jan.-June, 1876
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LAUSANNE, SOCIÉTÉ VAUDOISE DES SCIENCES NATURELLES. Bulletin, Vol. xiv. No. 75. 1876.

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PARIS, SOCIÉTÉ D'ACCLIMATATION. Bulletin Mensuel. Tome ii, 3e Serie. Oct., Nov., Dec., 1875. Tome iii, 3e Serie. No. 1, 2, 1876.

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PUBLISHERS. American Journal of Science and Art. American Naturalist. Beetle and Wedge. Boston Daily Globe. Bradford New Era. European Mail. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn City Item. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Salem Gazette. Salem Post. Salem Register. Salem Observer. Turner's Public Spirit.

The PRESIDENT remarked that the first field day usually occurs in the early part of June. In this, the centennial year, so replete with many interesting and all absorbing exhibitions and commemorations, the accustomed routine has been interrupted.

He alluded to several rare species of mollusks and other marine animals that are occasionally found on the Revere Beach during the lull, or after the close, of an easterly storm.

The President called on Prof. E. S. MORSE, who gave an interesting and very instructive general statement in regard to the formation of hills, and of the existing glaciers on the coast of Alaska. He showed how ridges,

like the hill on which the party were holding the meeting, were made by the masses of ice, or glacier. Another set of hills are produced by volcanic action; still another way of hill making is by the bending of rocks due to the continued concentration and rending of the crust of the earth. This, Prof. Morse said, might be illustrated by chains of mountains, the largest mountains being found on the borders of the largest areas of subsidence. He illustrated these formations with a piece of fruit cake, showing how the cake will bend and finally split, exposing the corresponding strata on each side in the form of mountain chains with a valley between. Prof. Morse mentioned Prof. Niles' experiments on the expansion of rocks, showing that lateral pressure in rocks exists.

Mr. GEO. DIXON of England spoke of the Winston dyke, and its formation, and gave a description of the dyke crossing the German Ocean. Prof. MORSE remarked on the fluid nature of trap, and the erosion caused by ice, as in the Connecticut valley, where the matrix of sandstone has been eroded, leaving the trap standing and protecting the sandstone below.

Mr. F. W. PUTNAM said he had looked for a shell heap said to be on the point, but did not succeed in finding it. He therefore gave a short account of the present Indians of the plains and the existing Indian War, and endorsed the views lately expressed by Mr. L. H. Morgan in regard to the proper policy to be pursued in relation to the Indians.

He then introduced Dr. G. A. OTIS, U. S. A., and Curator of the Army Medical Museum at Washington.

Dr. OTIS gave a brief account of the life of the Indian chief, Sitting Bull, from a pictograph made by that chief and now in the Army Medical Museum. Dr. Otis also

spoke of the advantages enjoyed by members of the Institute, and said he doubted if they were aware of the high reputation which the society had gained in the estimation of educated and scientific men away from its immediate location.

Mr. D. M. BALCH gave an account of the few minerals he had been able to find during the morning's ramble. They consisted principally of the several varieties of porphyry; the specimens were exhibited and elicited some remarks.

Mr. DIXON spoke of the plants he had found in the vicinity, and remarked on a plant which he stated should be emblematic of America, the *Epigea repens*, as he thought there should be a flower as well as a bird. Mr. Dixon also discussed the question of what the shamrock was.

Mr. S. C. BANCROFT asked for further information in regard to the shamrock, whether or not it was the same as the clover. Prof. MORSE, in answer to the question, believed that the word shamrock was known before clover was introduced, but that afterwards clover took the name of shamrock.

Mr. BANCROFT asked if our common plants, weeds for instance, were as common in foreign lands as here. Mr. DIXON answered that many flowers, weeds, etc., come with civilization, as for instance the wood-wax. He further alluded to the trouble we should probably experience from the introduced sparrow.

Mr. PUTNAM mentioned that the ornithologists gave timely warning against the introduction of the sparrow, and in regard to an emblematic plant he thought that while the *Epigea* as a flower would be appropriate, its present want of a popular name would be against its general adoption.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8.

SALEM, MASS., AUGUST, 1876.

No. 7.

One Dollar a Year in Advance. Ten Cents a Single Copy.

FIELD MEETING AT MANCHESTER, THURSDAY, AUGUST 10, 1876.

MEMBERS of the Institute and their friends residing in Salem and the neighboring towns, took the morning train for Manchester. On arriving at the station they were met by several gentlemen, and conducted to the Town Hall, which had been placed at the disposal of the Institute for the day by the courtesies of the town authorities.

After a cordial welcome, which was extended by Mr. Lewis N. Tappan in behalf of the citizens, the party, increased by additional arrivals, separated into groups and visited the several places of interest which had been designated, according as inclination prompted. Some went to Agassiz Rock,¹ a boulder of very large size, situated upon the top of Beaver-dam hill, about three miles from the town hall on the Essex road, and rests upon a small point of another rock so as to allow an open space

¹ See Bulletin of Essex Institute, Vol. VI, page 158.

between it and the underlying ledge. Several years since Prof. Agassiz visited this hill and was much interested in this particular rock ; and on the occasion of a field meeting of the Essex Institute in this town during October, 1874, several members visited the boulder and named it "Agassiz Rock," in commemoration of that distinguished naturalist. Some went to Kettle Cove to examine two interesting and remarkable natural curiosities located in its vicinity, just within the limits of Gloucester. One of these, a large fissure in the rocks on the seacoast, through which the ocean thunders and tosses its spray, known as "Rafe's Chasm." The name is said to be derived from a man named Ralph, who resided near by. Its length forms a right angle with the shore, from which it extends more than two hundred feet. The other is "Norman's Woe," a large rock lying a few rods from the shore and connected with it by a reef of stones which the sea leaves bare at low tide. Longfellow, in "The Wreck of the Hesperus," has alluded to this rock and given it a kind of immortality. Eagle Head, and several of the fine beaches, including the "musical sands," which are situated on part of what is known as "Old Neck Beach," or "Musical Beach," and are alluded to in a notice of the meeting on Thursday, August 2, 1866,² were visited. This rocky coast is relieved by several of these beautiful beaches, especially at some of the inlets or coves which indent the coast and add greatly to the attractiveness of this town for summer residents. Everywhere the landscape is most picturesque and varied. The woods, intersected by numerous brooks and rivulets, offer many inducements to the botanist to make explorations, and be sure of a reward for his toil in the obtaining choice speci-

²See Proceedings of Essex Institute, Vol. V, page 57.

mens of ferns that thrive so luxuriantly in many of the cool and sequestered places there found. Also other plants that thrive in this congenial soil and aspect, specimens of which were placed upon the table for examination.

The antiquary, as well as the lover of the picturesque and beautiful in Nature, can find much to interest him in the examination of the old records and in gathering up the traditionary lore that always clusters around our old New England towns. Manchester was settled about 1626, and was formerly a part of Salem, and known as "Jeffrey's Creek," named from William Jeffrey, an early settler and one of those who, with Roger Conant, John Lyford and others, separated from their brethren at Plymouth, about 1624, and joined those of the Dorchester Company who had set up a fishing establishment at Cape Ann, and removed thence to Salem in 1626, and formed the first permanent settlement in the colony of the Massachusetts Bay. Incorporated in 1640 as Manchester. An interesting series of articles on "The History of Manchester," is in course of printing in "The Beetle and Wedge," from the pen of John Lee, Esq., for many years the able and efficient town clerk.

At 1 o'clock the various parties reassembled at the Town Hall, where lunch was partaken, and the afternoon session was held. Many citizens of Manchester and places contiguous were present.

At 2.30 P. M. the meeting was called to order. The PRESIDENT in the chair. Records of the preceding meeting were read.

The SECRETARY announced the following correspondence:—

From Bern, Die Naturforschende Gesellschaft; J. S. Boothby, Philadelphia, Aug.

3; Buffalo Society of Natural Sciences, July 21; Calcutta, Geological Survey of India, Mar. 30; Frank M. Etting, Philadelphia, July 31; Charles Hammond, Monson, Aug.; Henry A. Homes, Albany, July 22; Mannheim, Verein für Naturkunde, April 4; Lewis N. Tappan, Manchester, Aug. 3.

The LIBRARIAN reported the following additions to the library :—

By Donation.

- ALLEN, STEPHEN M., of Boston. Religion and Science, by donor. 1 vol., 12mo.
 BAXTER, J. H., of Washington, D. C. Medical Statistics of the Provost Marshal General Bureau. Vols. 1, 2. 2 vols., 4to.
 BOLLES, E. C. Miscellaneous pamphlets, 10.
 CLOUTMAN, WM. R. Letters by Wm. Warden. 1 vol., 8vo.
 HUNT, T. F. New York Mirror, 1837-38. 1 vol., 4to. Popular Science Monthly, Aug. Centennial Eagle, July 4, 11, 18.
 JOHNSON, SAMUEL. Kenick's Exposition. 3 vols., 8vo. Writings by Prof. Frisbee. 1 vol., 8vo. Salem Directories, 1866, 1869, 1874. 3 vols., 8vo. Memoir of Dr. Holly. 1 vol., 8vo. Heavenly Union. 1 vol., 8vo. Greenwood's Miscellanies. 1 vol., 8vo. Sermons of Consolation. 1 vol., 8vo. Revised Statutes of Mass., 1836. 1 vol., 8vo. Greenwood's Sermons. 2 vols., 8vo.
 NORRIS, C. H. Sermon preached at Lexington, Apr. 19, 1776, by Jonas Clark. 8vo pamph.
 PALFRAY, C. W. The American State, by W. G. Dix. 1 vol., 8vo.
 PAYSON, E. H. The California, 1846, '47, '48.
 PERRY, W. S., of Geneva, N. Y. Miscellaneous pamphlets, 7.
 PUTNAM, A. P., of Brooklyn, N. Y. Easter Service of the Church of the Saviour, Apr. 16, 1876. 8vo. Discourse, Jan. 9, 1876. 8vo.
 PUTNAM, F. W. Declaration of Independence and Washington's Farewell Address. 1 vol., 8vo.
 SANBORN, GEO. Mass. Legislative Documents, House. 2 vols., 8vo. Senate 2 vols., 8vo. Order of the Day. 1 vol., 8vo. Miscellaneous pamphlets, 75.
 U. S. BUREAU OF EDUCATION, through Hon. JOHN EATON, Commissioner. Report of the Board of Education of New York, 1874. 1875. Maryland, 1874. Connecticut, 1872, 1873, 1874, 1875. St. Louis, 1869-70, 1871-72. Pennsylvania, 1875. Iowa, 1874-75. Miscellaneous pamphlets, 84.
 U. S. DEPARTMENT OF INTERIOR. Congressional Documents, 3rd Session, 42 Cong. 1 vol., 4to. 1st Sess., 43 Cong. 3 vols., 8vo. 2nd Sess., 43 Cong. 32 vols., 8vo.
 U. S. ENGINEERS' OFFICE, through Gen. A. A. HUMPHREY, Chief of Engineers. Report of Explorations in Utah in 1859, by J. H. Simpson. 1 vol., 4to. Washington, 1875.
 U. S. PATENT OFFICE. Official Gazette. May 30, June 6, 27, July 4, 11, 18, 25, 1876.

By Exchange.

- AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Proceedings of, Aug., 1875. 1 vol., 8vo.
 BERLIN, ZEITSCHRIFT FÜR DIE GESAMMTEN NATURWISSENSCHAFTEN. Band xi, xii. 1875. 8vo.
 BOLOGNA, RIALE ACCADEMIA DELLE SCIENZE. Rendiconto, 1875-76. 8vo.
 BOSTON PUBLIC LIBRARY. Bulletin for July, 1876.
 BREMEN, NATURWISSENSCHAFT VEREIN ZU. Abhandlungen. Band iv, Heft. iv, 1876. Band v, Heft. i, 1876.

- BRÜNN, NATURFORSCHENDEN VEREINES IN. Verhandlungen. Band xiii. 8vo. Katalog. 8vo.
- CANADA, GEOLOGICAL SURVEY OF. Report of Progress for 1874-75. 8vo.
- CHEMNITZ, NATURWISSENSCHAFTLICHEN GESELLSCHAFT ZU. Bericht. Jan., 1873, Dec., 1874. 8vo. Phanerogamen Flora von Chemnitz und Umgegend. 4to.
- DANZIG, NATURFORSCHENDE GESELLSCHAFT IN. Schriften. Band iii, Heft. iv. 8vo.
- FRANKFURT, ZOOLOGISCHE GESELLSCHAFT IN. Zoologische Garten, Jahrg xvi, Nos. 7-12. 1875.
- FREIBURG, NATURFORSCHENDEN GESELLSCHAFT ZU. Berichte. Band vi, Heft. iv. 8vo.
- LE MANS, D'AGRICULTURE, SCIENCES ET ARTS DE LA SARTHE. Bulletin. Tome xxiii. 1875.
- MARBURG, GESELLSCHAFT ZUR BEFÖRDERUNG DER GESAMMTEN NATURWISSENSCHAFTEN IN. Sitzungs-berichte Jahrg. 1874, 1875. Schriften. 1874. 8vo.
- PARIS, FRANCE, CROSSE ET FISCHER. Journal de Conchyliologie. Tome xvi. 3e Série. No. II. 1876.
- PARIS, SOCIÉTÉ D'ACCLIMATION. Bulletin Mensuel. Tome iii. Nos. 3, 4. 1876.* 8vo.
- S' GRAVENHAGE, NEDERLANDSCHE ENTOMOLOGISCHE VEREENIGING. Tijdschrift Voor Entomologie. Achttiende Deel i, ii, iii, iv. Aflevering. 1874-75.
- SOCIÉTÉ ENTOMOLOGIQUE DE BELGIQUE. Annales. Tome xvii. Fasc. i, ii. 1874-75. Tome xviii. Fasc. i, ii, iii. 1875-76. 8vo.
- TASMANIA, ROYAL SOCIETY OF. Notices of Papers and Proceedings of the, for 1874. 12mo.
- VEREINS FÜR ERDKUNDE. Notizblatt, Folge iii, Heft. xiv.
- WIEN, K. K. ZOOLOGISCH-BOTANISCHE GESELLSCHAFT. Verhandlungen. Band xxv. Jahrg. 1875. 8vo.
- WÜRZBURG, PHYSIKALISCH-MEDICINISCHE GESELLSCHAFT IN. Verhandlungen. Neue Folge ix, Band i, ii, Heft. 8vo.
- PUBLISHERS. American Journal of Science. Beetle and Wedge. Boston Globe. Bradford New Era. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn City Item. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Salem Gazette. Salem Observer. Salem Post. Salem Register. Turner's Public Spirit.

The PRESIDENT in his opening remarks alluded to the great pleasure the Institute derives in holding a field day in this town or vicinity, a locality rich in all that interests the student of Natural History. The woods on the one side, and the sea-shore on the other, offer an extensive field for observation and study. Meetings have been occasionally held near this great belt of woods that stretches back from the town and extends somewhat parallel with the coast from Beverly to Gloucester. In one part are the Chebacco ponds, a cluster of lovely lakes lying within the limits of the towns of Essex,

Hamilton and Wenham; in another the swamps where the magnolia grows in superb luxuriance, and also near the foot of the trunks of some of the lofty pines and hemlocks that little alpine plant, the *Linnaea borealis*, is found; thus representatives of the flora of the North and of the South find here a congenial soil. He spoke of his familiarity with, and wanderings through, these woods and along these shores some thirty or more years since, and noted some of the great changes that have occurred, especially by the opening of the railroad, thus rendering available the land adjacent to the rocky cliffs of the coast for the summer residences of the citizens of the metropolis. He recalled some of the incidents of the early field meetings in this town, and paid a passing tribute of respect to several of those who then took an active part in our doings and have long since ceased from their labors.

The President then called upon Vice President F. W. PUTNAM, who in response said that he had not had the opportunity for a ramble, as he did not arrive until noon. He had, however, seen a number of Indian articles in the house of General Tannatt, by invitation, and he had been much interested in a human skull found in Colorado and now in the General's collection. This skull so closely resembled the ordinary form of the Algonquin Indians, such as are found in the Indian burial places in Massachusetts, as to lead to the belief that it had belonged to an Indian of the same great family with our New England tribes, though it was very venturesome to attempt to place an isolated human skull in its proper ethnic group.

Mr. Putnam then gave a general account of the several forms of skulls prevailing among the American tribes, and extended his remarks to a brief general review of

Indians and Eskimos, and their resemblances to others of the great Mongolian race.

The PRESIDENT remarked, that, in this centennial year of the Republic, the reminiscences of the past involuntarily come to our recollection. On this occasion, those relating to the early botanists would especially claim our consideration.

One hundred years since, the far-famed Rev. Dr. M. Cutler, then the minister of the Hamlet Parish in Ipswich, since incorporated as the town of Hamilton, roamed through these woods and was undoubtedly collecting the materials for his paper, published in 1784, in the first volume of the *Memoirs of the American Academy*, entitled "An Account of some of the Vegetable Productions naturally growing in this Part of America, botanically arranged." Some fifty years since William Oakes of Ipswich, one of the most distinguished botanists of New England, was collecting the plants of this region. His writings on these subjects, and the beautifully preserved specimens in his herbarium which he liberally distributed, gave to these woods a world-renowned reputation as one of the natural flower gardens of America.

The President then called upon Mr. JOHN ROBINSON to give some account of the botany of this vicinity.

Mr. ROBINSON, in comparing the flora of Essex County, particularly that of Cape Ann, with more Northern and Southern regions, said:—

We have here representatives of both the White Mountain and New Jersey plants. Of the species growing at the base of the White Mountains, there are several Ferns and Lycopods, two species of *Viburnum*, the Striped Maple, American Yew, Red-berried Elder, and many

others; while along the coast the Alpine *Potentilla* is often found.

Of the southern species we have the *Magnolia glauca*, Yellow Thistle, and perhaps a few others. The White Cedar (*Cupressus thyoides*) reaches here its northern limit, and its name is in Maine and New Hampshire transferred to the Arbor Vitæ (*Thuja occidentalis*), which has been the cause of much confusion.

Mr. Robinson spoke of the water plants and those of the seashore, stating that there was a much larger number of species to be found than most persons supposed, and considering the natural features of the region, the Essex Flora might claim to be a very rich one.

The carnivorous habits of the *Drosera* were then described with the aid of a diagram. If an insect alights on the leaf, the tentacles, one after another, curl over and entrap it. The insect is digested by the plant and then the leaf opens again.

Darwin's experiments with this plant were then explained. He tried placing various substances upon the disc. Meat, he found, was enclosed and digested. Glass was enclosed for a certain time and then rejected.

Blowing hard upon the plant had no effect upon it. The secretion he found was almost exactly like animal pepsin.

In another genus nearly allied to *Drosera*, the *Dionæa*, the leaves fold over and inclose insects, which are then digested; but in this case the leaves are partly open at the edges, so that small insects can escape, the larger ones only being held. These leaves will repeat the process two or three times. Two species of *Drosera* are common in this locality.

The remarks were closed with some notice of a cone which was imbedded in the wood of the tree, and exhib-

ited by Col. Tannatt. The wood had grown for twenty-five years in order to entirely cover the cone.

Prof. E. S. MORSE made some additional remarks concerning the *Drosera*. It may be put to sleep by application of ether; paralyzed by pricking at a certain point; and may even be given a fit of dyspepsia by giving it certain kinds of food. Prof. Morse also described the manner in which grasshoppers make their peculiar chirping noises, and the notes they utter. Sometimes we are almost deafened by the noise they make. This is produced by rubbing the legs up and down against the wings. The rasping vibrating surface makes the noise we hear. It is so high in pitch no musician has yet recognized its key. In fact some persons cannot hear it; they are sound-blind to sounds of so high a pitch. If a whistle be sounded in presence of a large number of people at a successively higher and higher pitch, there will be finally some who cannot hear it, and as the pitch is raised higher still a larger number of persons will cease to hear it. The crickets rub the upper wings against the under. They have a note for sunlight, and a different one for cloudy weather. The males are in this case the singers. The cicada sings by means of a tendon stretched across a membrane which vibrates like a drum when the tendon is pulled or twitched rapidly. The vitality possessed by some of these insects was dwelt upon. A young lady of Salem, in making a preparation of a grasshopper, discovered that after the head was removed, carrying with it all the interior portion of the body (disembowelling it in fact, so that only the outer skin or shell with the wings remained), certain nerve centres in the rings of the shell upon being pricked caused the wings to flutter rapidly for some time.

Rev. GEORGE L. GLEASON, of Manchester, extended greeting to the members of the Institute. Natural History was out of his line and he had never given much attention to local history. He referred to Mr. John Lee and Mr. Lewis N. Tappan, both of Manchester, as more acquainted with the history of the town.

The President then called upon the Rev. JAMES FREEMAN CLARKE, who was present and responded as follows :

I am much obliged, Sir, for the honor you do me, but I feel like one who finds himself among a race whose language he does not understand. I should be very glad instead of using my own voice to hear more from Prof. Morse about the voice of the grasshopper. Little was known in my younger days about these things of science.

We were taught at Cambridge something of chemistry, and a very little about geology and mineralogy. But I remember when I first went to live near the Falls of the Ohio, I one day found what I supposed to be a petrified wasp's nest or enormous honeycomb ; but I was surprised afterwards to learn that it was a fossil. In botany we were taught, at Cambridge, only the Linnæan system ; and it amounted to learning the names of orders, genera, etc., and we found it not very interesting. Professor Nuttall was there then, but we never had any teaching from him.

I was reminded while listening to Mr. Putnam's account of the evidence of the movements of races on this continent, derived from the characteristics of the Indian skulls found in different parts of the country, of that collateral branch of knowledge, comparative philology, by which we study the linguistic characteristics of races. Perhaps some of you may not know how much light has been thrown upon the history of the human race by that

study. If we had been told a few years ago that we could go back so far (some two or three thousand years before authentic records) in the history of our race, by the study of language, we should have thought it a most amazing statement. But such is the fact, as I can show you in a few minutes.

It was formerly thought that the Latin came from the Greek, but we now know that it is the oldest language of the two. It has long been known that there are words in the Teutonic languages which have a remarkable relation to words in the Latin and Greek languages; but this was not understood till the Sanskrit language began to be studied. Sir William Jones found that the principal languages of Asia and Europe had a common origin. Sanskrit was at first believed to be the original parent language, but it was afterward found to be the elder sister. After that was studied we could explain many of the irregularities of the Greek and Latin words. This is very apparent in the formation of the substantive verb, to be. The Latin "Sum, Es, Est" was so irregular that it was thought by the elder grammarians that "Es," and "Est," must come from some obsolete root. But in Sanskrit we find it "Asmi," I am; "Asi," Thou art; "Asti," He is,—which makes the derivation of the second and third persons plain. In the Zend, or ancient Persian, it is "Ahmi, Ahi, Asti." In the Gothic it is "Im, Is, Ist." In the Slavie "Yesmi, Yesi, Yesto." In the Irish it is "Esmi, Essi, Esti." So the English word "Daughter" is in Sanskrit, "Duhitar;" while in Greek it is "Thugateer." Here the Zend, which is "Dughter," gives the connecting link. We now know what the ancient Greeks did not themselves know,—the origin of this word of theirs. In Sanskrit it means, not only "Daughter," but also "Milkmaid." The ancient Arians, a pastoral people,

and keeping many cows, employed their daughters to milk, and so the one word was employed in both meanings.

But there are some words in each language entirely distinct and peculiar to it. We see the reason of this. When the first parent race emigrated from central Asia and swept on westward, branches turned off in various directions, one to the south, another to the southwest, others to the southeast and southwest of Europe, etc. Branches flowing to the north formed the great Celtic, Slavic and Teutonic races.

When these tribes separated from the parent stock they must have taken with them the civilization which they had before separating. So the several branches or varieties carried with them the same words for common things which they all had when together, such as the word for "House," showing that they lived in houses before migrating from their ancient homes. Thus too we find that there are similar words in all these great linguistic streams for ox, horse, sow, mouse, wheat, clothes, the numerals one, two, three; also for plough, hatchet, hammer, gold, silver, copper, tin. But when we find the names of the same thing differing in all these tribal languages, we may be confident that the original race knew nothing of it, and did not use it. Such words as that for *sail*, or that for *boats*, propelled by other means than simple oars, are not found common to all; hence they did not have sails or sail boats when together.

The result of such unexpected new discoveries in so old a science is finally to bring us to the conclusion that there is no end to knowledge. The discovery of some new instrument or method of investigation will open to us means of increasing our knowledge. In our time the wonderful discovery of the meaning of the lines in the

solar spectrum has enabled us to do what we never could have done before, or imagined possible to have done. There is no reason for doubting that many similar potent instruments for penetrating the mysteries of Nature are yet to be discovered.

I thank you, ladies and gentlemen of the Essex Institute, for listening to me so patiently, and wish you all success in your studies in these deeply interesting departments of knowledge.

Mr. RICHARD H. DANA being called upon, after disclaiming any special knowledge of the subjects discussed, saying that he could make out as clear a case of ignorance of scientific questions as could Dr. Clarke, related in confirmation of this an incident at his father's house after he had graduated. President Woolsey, who was our guest, asked me if I had seen, in California, the *cactus*. Not knowing what the *cactus* was, I endeavored to get over the difficulty by saying that I had not been in the interior where the rich lands and gardens were, but on the dry, sandy seacoast. My family were somewhat disturbed, they being aware, as I was not, that the *cactus* grew in just such dry, sandy places. I then described a large "prickly pear," with its beautiful flower and blossoms, which we found on the coast, and this, to my confusion, was the *cactus* itself.

As Dr. Clarke has said, we collegians thought moral science the only important study. After graduating at Harvard I thought of taking a course in philosophy with Professor Marsh, at Burlington, Vt. He asked me what I knew of natural science. I told him, nothing. To teach moral and intellectual philosophy thoroughly (he said) there must be a ground-work of the natural sciences. The laying of this foundation, I found, would take too much time, and I did not attempt his comprehensive course.

I therefore can contribute nothing to your purposes. But when I have such an opportunity to come and listen to such discussions I like to take advantage of it.

If I shall not be occupying too much of your time, Mr. President, I will give an account of my visit to the volcano of Manna-Loa during the eruption of 1859, for the most illiterate savage can describe what he has seen. The lava flowed through a tortuous course of forty miles in length. I procured the services of two natives with their boat to take me to the place where it emptied into the sea. On arriving near the place the scene became one of the utmost grandeur. There was no moon, but the stars shone with that brightness which is never seen outside of the tropics. There was a light and pleasant breeze. The space which the lava occupied, as it descended into the sea, was three miles in width; that is to say, not in an unbroken line, but pouring in, sometimes at one end, sometimes at the other, and again in the middle. The lava cools on the surface quickly and assumes a dark lead color, but where it is hot and flowing, or where this crust is broken through, it shows a beautiful scarlet or blood-red color. As the lava flows slowly along it meets with obstructions and resisting forces which for a time create a barrier; but after a while having risen higher than the obstruction, it overflows, and finally carries away the débris and bears it along in its course, where it tumbles over, sometimes from a considerable height, a mass of lava, earth and stone; and, with a loud hissing noise, accompanied by a series of explosions like the rattling of small arms along a line of battle, plunges into the sea. The molten lava heats the sea, so that it was appreciable even at the distance I was, not less than a mile away. I endeavored to induce the men to take the boat nearer, but nothing that I could offer prevailed upon them to do so. This reluctance arose partly from their supersti-

tion; the volcano being the residence of their goddess Pelé, whose anger was evinced by its thunderings and eruptions. They gave, however, as an excuse for not approaching nearer, that the heat of the water would melt the pitch from the seams of the boat, and that we should all sink. Of this of course there could be no danger, for I found upon placing my hand in the water that it was just a little warm.

Imagine such a scene here; the mountain forty miles away. You hear of the approach of the lava from day to day, for it moves slowly in its course to the sea. When it reaches Manchester it destroys this place utterly, removing all that is before it, the houses and all the work of men's hands; the harbor, creeks and all vegetation, involved in one general destruction. In the process of time the lava cools and cracks; vegetation starts in the seams and crevices of the surface, and finally a new soil covers it; and you have a new harbor, a new soil, and a new town, perhaps a mile or two farther into the ocean.

Mr. LEWIS N. TAPPAN was called upon and gave a brief sketch of the local history of Manchester. It was first settled in 1626 by a few fishermen from Cape Ann, William Jeffries, William Allen, William and John Norman and others. It was called Manchester simply because many of the settlers came from Manchester in England. Mr. Tappan thought some more appropriate name, like *Magnolia*, or *Masconomo* (the name of the Indian chief who brought strawberries to Gov. Winthrop's party, which landed here on their way to Salem in June, 1630), would have been better. He then referred to the partial destruction of the schooner "Nancy," by the British, at Mingoe's beach, A. D., 1813, and to the fight between the Chesapeake and Shannon, and other naval engagements that have occurred near the Manchester shore.

Rev. C. A. BARTOL remarked that he had great pleasure in seeing the cup of this communion table passing round. There should be no war between science, philosophy and religion. All meet on common ground in pursuit of knowledge. Philosophy must reign, but must not govern. It has no right, as religion has no right, to shut out any facts that knowledge finds. Religion reigns over all, but without injustice to any. Life is the nearest fact, the most universal thing. The mountain crumbles, but the plant springs up and insects grow. The trees, the beasts, and the men are of one stuff. Who can say what of the mountain is in the man? What of granite in the plant? What shall we say of the notion of a Deity as out of matter? This precipitate of mind into matter ever tends to go back into mind. The Agassiz Boulder suggests the saying that Queen Elizabeth's mind was like one of those Druidical rocking-stones, which the slightest touch can disturb, but the greatest power could not overthrow. I know a tree near here, three hundred, perhaps five hundred, years old. We think the tree is the weak yielding thing. But we know very well how this tree clings to the rock and sucks food from it, as the child from its mother's breast. No doubt in those five hundred years that ledge has changed very much. The rock has crumbled, but the tree remains. The great sentiments, the religious sentiments, will survive after all these hard elements of nature have melted and changed and passed away. Here is illustrated the immortality of the principle of life.

The time drawing near for the arrival of the train for Salem, the meeting adjourned, after having passed a vote of thanks, offered by Mr. W. P. UPHAM, to the town authorities and to the citizens for their kindness and courtesies.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8. SALEM, MASS., SEPT., OCT., NOV., 1876. No. 8.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, OCTOBER 2, 1876.

MEETING this evening at 7.30 o'clock. PRESIDENT in the chair. Records of preceding meeting read.

Mrs. Charles Arey and Mr. John P. Reynolds of Salem were elected resident members.

Mr. ARTHUR W. FOOTE was elected the curator of Music, vice Mr. C. H. HIGBEE who declined a reelection.

Mr. W. D. NORTHEND stated that Mr. R. S. SPOFFORD of Newburyport, had discovered a curious oven on or near his grounds, and would like to have the Institute examine it. He also tendered Mr. Spofford's invitation to the Society to hold a field meeting at his place.

Mr. JAMES KIMBALL presented several coins.

Mr. F. W. PUTNAM, in behalf of the author, presented the following communication:—

LIST OF BIRDS COLLECTED BY MR. CHARLES LINDEN, NEAR SANTAREM, BRAZIL.—By J. A. ALLEN.

IN February, 1873, Mr. Linden left New York for Pará, Brazil, for the purpose of collecting objects of Natural History. Arriving at Pará at the height of the rainy season, he found the constant rains and the inundated state of the country highly unfavorable for his work, and soon pushed on to Santarem, on the Amazon, five hundred miles west of Pará. Here he found the conditions for work more favorable, and adopted this point as the scene of his labors, spending most of his time here from early in April till the end of July. In June he made an excursion to Rhomes, sixty miles distant, where he spent a few weeks, and in August passed a short time collecting at Anjos and Maraço, at the mouth of the Amazon. The chief part of the collection was hence made at Santarem, in the campos and sparsely wooded region of the immediate vicinity. The notes added are those accompanying the specimens. The collection was made chiefly under the auspices of the Museum of Comparative Zoölogy, Cambridge, Mass., where the greater part of Mr. Linden's collection of birds still remains. The collection embraced two hundred and fourteen specimens, representing one hundred and twenty-eight species.

1. *Turdus albiventris* Spix.¹
2. *Mimus saturninus* Licht. Santarem, April 12; common.
3. *Donacobius atricapilla* (Linn.). Santarem.
4. *Vireosylva agilis* (Licht.). Rhomes², June 18; common.
5. *Dacnis cayana* (Linn.). Santarem, April 12; common.
6. *Calliste cayana* (Linn.). Santarem, April 12 and June 2; common in thickets.
7. *Tanagra episcopus* Linn. Santarem, April 12 and June 6; common in thickets.
8. *Tanagra palmarum* (Max.). Santarem, June 5; common in woods and thickets.
9. *Ramphocelus jacapa* (Linn.). Santarem, Maraço and Para; common.
10. *Lanio atricapillus* (Gm.). Santarem, May 27; not common.
11. *Tachyphonus cristata* (Gm.). Santarem, May 27; in small flocks in thick woods.

¹The nomenclature adopted in this paper is, with few exceptions, that of Messrs. Selater and Salvin's "Nomenclator Avium Neotropicalium."

²A plantation so-called, mentioned in Mr. Linden's notes as being sixty miles from Santarem.

12. *Spermophila castaneiventris* (Cab.). Santarem, May 1; found among the reeds along edge of the Amazon River.

13. *Spermophilus nysia* (Vieill.). Santarem, June 5; common in the vicinity of the town.

14. *Paroaria gularis* (Linn.). Santarem, May 1; rather common in the campos.

15. *Sycalis columbiana* Cab. Santarem, April 12; in small flocks on the campos.

16. *Ostinops yuracarium* (Laft. & d'Orb.). Santarem.

17. *Ostinops cristatus* (Gmel.). Santarem, May 15; common.

18. *Cassicus persicus* (Linn.). Santarem, April 10; common and in full plumage.

19. *Icterus croconotus* (Wagl.).

20. *Molothrus bonariensis* (Gm.). Santarem, June 5; common near the town.

21. *Gymnomystax melanieterus* (Vieill.). Rhomes, June 13; Marajos, August 1; common.

22. *Leistes guianensis* (Linn.). Santarem, May 1-24; common.

23. *Cassidix oryzivora* (Linn.).

24. *Taenioptera nengeta* (Linn.). Campos near Anjos (eastern part of the island of Marajos), Aug. 1.

25. *Taenioptera velata* Licht. Marajos, August 1; open campos, rare.

26. *Arundinicola leucocephala* (Linn.). Rhomes, June 28; common near the reeds along the Tapajos River.

27. *Elainea pagana* (Licht.). Santarem, June; very common.

28. *Myiodinastes solitarius* (Vieill.). Santarem, May 19; common about clearings.

29. *Megarhynchus pitangua* (Linn.). Santarem, May 23; common in clearings near deep woods.

30. *Myiarchus tyrannulus* (Muell.). Santarem, May 23; common.

31. *Myiarchus nigriceps* Scl. Santarem, May 23; common.

32. *Empidonomus varius* (Vieill.). Santarem, June 2; common on the outskirts of woods.

33. *Tyrannus niveigularis* Scl. Santarem, April 12; common in the open campo.

34. *Milvulus tyrannus* (Linn.). Marajo, August 5; very common.

35. *Pipra*, sp. incog.

36. *Tityra personata* Jard. & Selby. Santarem, May 24; common in flocks in deep woods.

37. *Pachyrhampus cinereus* (Bodd.). Santarem, June 5; common near the town.

38. *Phœnicocercus carnifex* (Linn.).

39. *Querula cruenta* (Bodd.). Santarem, May 18; rare, in deep woods.

40. *Furnarius*, sp. incog.
41. *Dendroornis multiguttata* (Laftr.). Santarem. April 20; common.
42. *Picolaptes bicittata* (Licht.). Santarem, April 8; common in thickets.
43. *Thamnophilus luctuosus* (Licht.).
44. *Thamnophilus doliatus* (Linn.). Marajo, August 10.
45. *Ihopoterpe torquata* (Bodd.). Deep woods near Santarem, May 19; common.
46. *Eupetomena macrura* (Gm.). Campos near Santarem, April 20; common.
47. *Lampornis gramineus* (Gm.).
48. *Lampornis mango* (Linn.). Marajo, August 10; common.
49. *Thalurania nigrofasciata* Gould.
50. *Eucephala cerulea* (Vicill.).
51. *Thaumatias linnaei* Bon.
52. *Podager nacunda* (Vicill.).
53. *Chordeiles acutipennis* (Bodd.). Common in the campos near Anjos, August 5.
54. *Stenopsis ruficerrix* (Sci.).
55. *Picumnus minutus* (Linn.). Marajo, August 10; common.
56. *Campephilus melanoleucus* (Gm.). Santarem, June 5; common.
57. *Celeus citrinus* (Bodd.). Santarem, in deep woods, April 10; common.
58. *Momotus brasiliensis* Lath. Rhomes, June 29; common in deep woods.
59. *Ceryle torquata* (Linn.). Santarem, June 5; common.
60. *Ceryle amazona* (Lath.).
61. *Ceryle americana* (Gm.). Santarem, May 1; rather rare.
62. *Ceryle superciliosa* (Linn.).
63. *Trogon melanurus* Sw. Santarem, May 18; common.
64. *Trogon meridionalis* Sw. Santarem, May 22; deep woods, rare.
65. *Trogon viridis* Linn. Rhomes, June 28; common.
66. *Galbula viridis* Lath. Santarem, April 10; common near streams.
67. *Bucco tamatia* (Gm.). Rhomes, June 9; deep woods, rare.
68. *Monasa morpheus* (Halm). Santarem (May 21), and Rhomes, June 29; common in deep woods.
69. *Monasa nigrifrons* (Spix). Santarem, April 12; common in small flocks about plantations.
70. *Chelidoptera tenebrosa* (Pall.). Campos about Santarem, April 20.
71. *Crotophaga ani* Linn. Rhomes, June 28; common, in small flocks.
72. *Crotophaga major* Linn. Rhomes, June 18; in small flocks.
73. *Diplopterus navius* (Gm.). Marajo, August; in small flocks of four to seven or eight.

74. *Dromococcyx pavoninus* Pelzeln.

75. *Piaya cayana* (Linn.). Santarem, April 18; common in thickets.

76. *COCCYGUS LINDENI*, n. sp.

Above olivaceous-gray, with bronzy reflections, and tinged with ash on the head; beneath cinereous, fading to white over the abdomen; remiges wholly without rufous; under side of wings with a faint ochraceous tinge at the base of the quills; outer rectrices black, broadly tipped with white; middle pair like the back, wholly unicolor (not darker at the tip as in *C. americanus*). Upper mandible and tip of lower black; rest of lower mandible and the edge of the upper at the base, yellow. Tail much graduated, the middle rectrices being 1.75 longer than the outer. Length, 10.50; wing, 5.15; tail, 5.50.

This species more closely resembles *C. americanus* than any other well-described species, from which it differs in its considerably smaller sides, in the total absence of rufous in the remiges, and in the strongly cinereous color of the lower parts. The bill and the tail are colored precisely as in *C. americanus*, except that the middle pair of rectrices are unicolor, instead of darker near the tip. The dorsal surface is also of a rather darker tint, with rather more ash on the head.

This species seems to also bear a close resemblance to *C. euleri* Cab. (Journ. f. Orn., xxi Jahrgang, p. 72, Jan., 1873), with which it may prove to be identical, but Cabanis's very meagre description is insufficient to enable me to fully decide. I hence adopt a provisional name for the species above described. Cabanis's specimen of *C. euleri* was obtained at a far more southern locality,—Cantagallo, in the Province of Rio de Janeiro.

Of the *C. lindenii* I have but a single example, collected by Mr. Linden, in whose honor I have named the species, at Santarem, April 19, 1873.

77. *Rhamphastos erythrorhynchus* (Gmel.). Santarem, April and May; common in the forests.

78. *Rhamphastos arig* Vieil. Santarem, June 5; common in deep woods.

79. *Pteroglossus aracari* (Linn.). Santarem; common in the forests.

80. *Selenidera maculirostris* (Licht.). Santarem, May 18; common in deep woods.

81. *Ara ararauna* (Linn.). Santarem.

82. *Ara macavanua*. Marajo, August 1; rare, in small flocks.

83. *Conurus aureus* (Gm.). Santarem, April 10; in small flocks.

84. *Conurus roseifrons* Gray. Santarem, May 28; in small flocks.

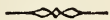
85. *Brotogerys virescens* (Gm.). Santarem, April 15; common.

86. *Psittacula passerina* (Linn.). Santarem, June 1; seen in small flocks.

87. *Pulsatrix torquata* (Daud.).

88. *Asturina nitida* (Lath.). Santarem, July 12; in deep woods.
89. *Asturina natteri* Scl. & Salv. Rhomes, June 10; near clearings.
90. *Spizæus ornatus* (Daud.). Rhomes, June 28; rare.
91. *Accipiter bicolor* (Vieill.). Santarem.
92. *Hypotriorchis ruficularis* (Daud.). Santarem, May 21; deep woods, rare.
93. *Harpagus diodon* (Temm.). Santarem, May 1.
94. *Milvago chimachima* (Vieill.). Anjos, August 3; campos, rare.
95. *Polyborus tharus* (Mol.). Rhomes, June 20; rare. Iris, light brown.
96. *Cathartes aura* (Linn.). Marajo, August; common.
97. *Plotus anhinga* Linn. Marajo, August 3; common.
98. *Ardea cocoi* Linn.
99. *Ardea egretta* (Gm.). Santarem.
100. *Ardea candidissima* (Gm.) Santarem, May 1; singly, near the banks of the Amazon.
101. *Tigrisoma brasiliense* (Linn.).
102. *Cancroma cochlearia* Linn. Marajo, August 5; common.
103. *Ciconia maguari* (Gm.).
104. *Tantalus loculator* Linn.
105. *Ibis rubra* (Linn.). Marajo, August 5; common.
106. *Theristicus melanopsis* (Gm.).
107. *Platalea ajaja* (Linn.). Anjos, August 1; common in small flocks.
108. *Columba rufina* (Temm.). Rhomes, June 13; in small flocks; not common.
109. *Zenaida ruficauda* Bon. Santarem, June 1; in small flocks on the campos.
110. *Chamæpelis passerina* (Linn.). Santarem, June 5; common in small flocks.
111. *Chamæpelis talpacoti* (Temm.). Santarem and Rhomes, in small flocks about clearings.
112. *Leptoptila rufaxilla* (Rich. & Bern.). Santarem, June 6; seen singly, and apparently not common.
113. *Pipile cumanensis* (Jacq.). Santarem, May 10; deep woods; not common.
114. *Ortalia ruficeps* Wagl.
115. *Odontophorus guianensis* (Gm.). Santarem, May 27; not common.
116. *Aramides mangle* (Spix).
117. *Porphyrio parvus* (Bodd.). Rhomes, June 13; common, in small flocks.
118. *Eurypyga helias* Pallas.
119. *Parra jacana* (Linn.). Santarem, May 4; common.

120. *Vanellus cayanensis* (Gm.).
 121. *Ægialitis collaris* (Vieill.). Anjos, August 5; rather rare.
 122. *Gallinago frenata* (Max.). Marajo, August; common in marshy grounds, in small parties of three to five individuals.
 123. *Ereunetes petrificatus* (Ill.). Marajo, August 4; common in flocks.
 124. *Gambetta flavipes* (Bon.). Marajo, August 10-20; common in flocks; extremely shy.
 125. *Tringoides macularius* (Linn.). Santarem, April 12; common along the river banks. Specimens were obtained both in the mature and immature plumage.
 126. *Crypturus cinereus* (Gmel.). Santarem, July 6; common in deep woods.
 127. *Crypturus obsoletus* (Temm.).
 128. *Crypturus pileatus* (Bodd.).

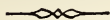


REGULAR MEETING, MONDAY, OCTOBER 16, 1876.

Meeting this evening. The PRESIDENT in the chair. In the absence of the Secretary, Mr. WM. P. UPHAM was chosen Secretary *pro tem*. Records of preceding meeting read.

Mr. J. S. Kingsley, of Salem, was elected a resident member.

Dr. F. H. Hance of Whampoa, China, was elected a corresponding member.



REGULAR MEETING, MONDAY, NOVEMBER 6, 1876.

MEETING this evening. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From F. E. Abbot, Boston, Sept. 6; J. A. Allen, East Jaffrey, N. H., Aug. 13; E. P. Boon, New York, Nov. 1; P. S. Boothby, Philadelphia, Aug. 15, Sept. 1, 6, Oct. 1, 4; Bresil, Bureau de la Commission de l'Empire; Bruxelles, Acad. Roy. des

Sciences, des Lettres, et des Beaux-arts de Belgique; Buffalo Historical Society, Sept. 7, 25; Cook, Son & Jenkins, Philadelphia, Aug. 15; James T. Crans, Indianapolis, Sept. 23; Davenport Academy of Natural Sciences, Sept. 15; George D. Dimon, Utica, Sept. 1; L. P. Farmer, Philadelphia, Sept. 6, 30; Samuel A. Green, Boston, Aug. 14; Frankfurt, Senckenbergischen Naturforschenden Gesellschaft, Feb. 26; Harvard College, Museum of Comp. Zoology, Oct. 11; T. W. Higginson, Newport, R. I., Oct. 5; Ernest Ingersoll, New York, Sept. 27, Oct. 11; A. C. Kendall, Boston, Sept. 13; George Collins Levey, Philadelphia, Oct. 16; George Lincoln, Hingham, Sept. 19; Lisbonne, Acad. Royale des Sciences, Aug. 23; J. Dewitt Miller, Cross River, N. Y., Oct. 24; London, Society of Antiquaries, Oct. 16; Lyons, Société d'Agriculture, Histoire Naturelle, et Arts Utiles, July 20; New Hampshire Historical Society, Sept. 9; New Jersey Historical Society, Sept. 6, Oct. 11; New York Historical Society, Sept. 8, Oct. 12; New York Mercantile Library Association, Oct. 11; Ohio Historical and Philosophical Society, Sept. 7, Oct. 13; Samuel C. Oliver, Philadelphia, Aug. 19; George B. Phippen, Boston, Aug. 20, Sept. 7; John S. Pierson, New York, Oct. 10; H. J. Pratt, Chelmsford, Sept. 6; F. W. Putnam, Cambridge, Oct. 24; Aaron Richardson, Unionville, Missouri, Sept. 4; Thos. S. Roberts, Minneapolis, Minn., Oct. 29; D. A. Rogers, Chicago, Ill., Oct. 18; W. Hudson Stephens, Lowville, N. Y., July 16; Wm. W. Stewart, Buffalo, N. Y., Sept. 29; Stockholm, Acad. Roy. Suedoise des Sciences, Jul. 6; Thomas R. Trowbridge, New Haven, Conn., Sept. 6; United States Centennial Commission, Philadelphia, Oct. 9; Vermont Historical Society, Sept. 7, Oct. 12; Williams' Lecture-Bureau, Boston, Sept. 3.

The LIBRARIAN reported the following additions:—

By Donation.

- ABBOT, F. E., OF BOSTON. Index. Vols. 5, 6, 1874, 1875. 2 vols., folio.
- BOARDMAN, SAM'L L., OF AUGUSTA, ME. Report of the Maine Board of Agriculture, 1872, 1873, 1874. 3 vols., 8vo.
- BOLLES, E. C. Universalist Register, 17 numbers. Centennial Eagle, Aug. 22, 29, Sept. 5. Miscellaneous papers, 5.
- BUFFALO YOUNG MEN'S ASSOCIATION. Catalogue of the Library. 1 vol., 8vo. Buffalo, 1871. First Supplement to the Catalogue. 8vo. 1872. Annual Reports of 3 pamphlets.
- FOSTER, W. J. American Agriculturist, 1867 to 1875. Cultivator and County Gentleman, 1870 to 1875. The Horticulturist, 1859 to 1866. Journal of Health, 1859 to 1864. New England Farmer, 1859 to 1864.
- GOSS, ELBRIDGE H., OF MELROSE, MASS. Historical Address at Melrose, July 4, 1876, by donor. 8vo.
- GREEN, S. A., OF BOSTON. Historical Address at Groton, July 4, 1876. Miscellaneous pamphlets, 8.
- HART, C. F., OF PHILADELPHIA. Miscellaneous pamphlets, 15.
- HUNT, T. F. Reference Catalogue of Current Literature. 1 vol., 8vo. Genealogy of the Hunt Family. 1 vol., 8vo. Christian Lyre and Supplement. 1 vol., 12mo. History of Miss Meredith, Vol. I. 1 vol., 8vo. The Jilt. 1 vol., 8vo. Jubilee Memorial. 1 vol., 8vo. Anglo-Chinese Calendar, 1854. 2 vols., 8vo.
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Mrs. Grace A. Ellis, of Swampscott, was elected a resident member.

Mr. DAVID PINGREE having declined the office of Treasurer, Mr. HENRY M. BROOKS was unanimously elected to the office.

Mr. CALEB COOK presented, in behalf of Mr. J. H. LEFAVOR, a series of twenty photographs of Salem and vicinity.

Mr. ALFRED PEABODY presented, in behalf of Mr. A. S. Peabody, specimens of fishes from Cape of Good Hope.

Mr. T. F. HUNT offered the following :

Whereas, it is understood that the Old South Preservation Committee, of Boston, propose holding an Exhibition of Historical Relics for the benefit of the Old South Fund ; and *whereas*, the Essex Institute wishes to avoid any action which might conflict with such exhibit ; it is

Voted, That the Exhibition of Historical Relics proposed to be holden by the Institute the coming winter be postponed to another season, and the Secretary be instructed to present the thanks of the Institute to Col. F. M. Etting, of Philadelphia, for his kind offer to loan a collection of valuable relics, and inform him of the reason for postponement.

Vice President A. C. GOODELL offered the following :

Whereas, The Essex Institute has witnessed, with admiration, the labors of those citizens of Philadelphia who have joined in collecting for exhibition during the pro-

gress of the International Exhibition, such historical relics and documents as would tend to excite patriotism, and more strikingly illustrate the progress of our country from the earliest colonial period, be it

Resolved, That the Institute express to Col. F. M. Etting and Charles Henry Hart, Esq., and to those ladies and gentlemen who were associated with them, its high appreciation of the courage with which they undertook, and the discretion, energy and perseverance with which they have conducted the truly National Exhibition at Independence Hall, and in the Academy of Fine Arts in Philadelphia during the past summer.

Resolved, That the Secretary be instructed to present a copy of the foregoing preamble and resolutions to Col. Etting and Mr. Hart, with the request that they will communicate the same to their associates in such manner as they shall find most convenient.



REGULAR MEETING, MONDAY, NOVEMBER 20, 1876.

MEETING this evening. The PRESIDENT in the chair. Records of preceding meeting read.

The subject of lectures the coming season was fully discussed, and a programme was presented by the lecture committee.

Mr. H. H. Edes of Charlestown, was elected a resident member.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8.

SALEM, MASS., DEC., 1876.

Nos. 9-12.

REGULAR MEETING, MONDAY, DECEMBER 4, 1876.

MEETING this evening. The PRESIDENT in the chair.
Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From J. A. Allen, Cambridge, Nov.; Belfast Naturalist Field Club, Sept. 7; Charles A. Bemis, Marlborough, N. H., Aug. 3; George B. Blodgett, Rowley, Nov. 20; S. L. Boardman, Augusta, Me., Nov. 17, 27; Henry Breed, Lynn, Nov. 18; Cherbourg, Société Nationale des Sciences Naturelles, Oct. 13; C. Cushing, Boston, Nov. 16; C. W. Eaton, Wakefield, Nov. 27, Dec. 2; Charles Wyllys Elliott, Cambridge, Nov. 1; Grace A. Ellis, Boston, Nov. 18; Emden, Naturforschende Gesellschaft, Sept. 1; Frank M. Etting, Philadelphia, Nov. 20; A. W. Foote, Boston, Nov. 9; A. C. Goodell, Jr., Nov. 25; A. F. Gray, Danversport, Nov. 18; Kjobenhavn, Det K. Danske videnskabernes Selskab, Oct. 17; F. LeBaron, Boston, Nov. 18; J. D. Miller, Cross River, N. Y., Nov. 14; W. S. Nevins, Nov. 22; S. C. Oliver, Philadelphia, Nov. 21; Page Belting Co., Concord, N. H., Nov. 17; J. S. Pierson, New York, Nov. 15, 17, 23, 24; H. Reed, Philadelphia, Nov. 11, 15; Abby S. Richardson, Boston, Nov. 18; T. S. Roberts, Minneapolis, Nov. 16; C. Saltonstall, Nov. 25; Smithsonian Institution, July 26; U. S. Bureau of Education, Nov. 10; J. A. Vinton, Winchester, Nov. 24; Zurich, Naturforschende Gesellschaft, Aug.

Dean Dudley of Wakefield, was elected a corresponding member.

Vice President F. W. PUTNAM presented to the soci-

ety, in behalf of the author, a work by Dr. GEORGE A. OTIS, U. S. Army, containing a list of the human crania and skeletons now in the collection of the Army Medical Museum at Washington. Mr. Putnam said that this work was very complete in the measurements given, and was a valuable addition to the library as a work of reference.

Mr. PUTNAM read a communication on the

BIRDS OF NORTH-EASTERN ILLINOIS.

By E. W. NELSON.

THE region about the southern end of Lake Michigan, in Illinois, presents an unusually fertile field for the ornithologist. Situated, as it is, midway between the wooded region of the East and the treeless plains of the West, with the warm river bottoms of the South, rich in southern species, extending within a comparatively short distance, and the Great Lakes upon the north, North-eastern Illinois forms a kind of "four corners" where the avian-faunæ of four regions intergrade. To the proximity of Lake Michigan we are indebted for a number of more or less strictly maritime species, among the most important of which are, during summer, *Anmodromus caudacutus*, *Ægialitis melodus* and *Anas obscura*, and, during the migrations, *Streptopelia interpres*, *Tringa bonapartei*, *T. maritima*, *T. canuta*, *Calidris arenaria*, with all the common water birds, with very few exceptions, found upon the coast at that season. In winter the list is larger, during which season are found *Histrionicus torquatus*, *Harlelda glacialis*, the three species of *Oedemia*, *Somateria mollissima*, *S. spectabilis*, *Stercorarius pomatorhinus*, *Larus glaucus*, *L. leucopterus*, *L. marinus*, and *Rissa tridactyla*.

As would be expected, the southern species occur only in summer, with the exception of *Lophophanes bicolor*, which is found only in winter. The principal southern species are: *Minus polyglottus*, *Parus carolinensis*, *Thryothorus ludovicianus*, *T. bewicki*, *Protonotaria citrea*, *Dendroica* var. *abilora*, *D. cerulea*, *Oporornis formosus*, *Icteria virens*, *Myiodiocetes mitratus*, *Pyranga aestiva*, *Collurio* var. *ludoviciana*, *Cardinalis virginianus*, *Centurus carolinus*, *Nauclerus forficatus*, *Rhynogryphus aura*, *Tantalus loculator*, *Gallinula martinica*, *Porzana jamaicensis*, *Sterna regia* and *S. antillarum*.

We have also, either as residents or transient visitants, the following western species: *Myiadestes townsendi*, *Vireo belli* (breeds), *Hes-*

periphona vespertina, *Plectrophanes pictus*, *Ammodromus lecontei*, *Zonotrichia* var. *intermedia*, *Z. coronata*, *Z. querulea*, *Spizella pallida* (breeds), *Eremophila* var. *leucolæma* (breeds), *Sturnella* var. *neglecta* (breeds), *Scolecophagus cyanocephalus*, *Pica* var. *hudsonica*, *Chordiles* var. *henryi* (breeds), *Buteo* var. *calurus* (breeds?), *B. swainsoni* (breeds?), *Tringa bairdii*, *Steganopus wilsoni* (breeds), and numerous others less strictly western.

A belt about twenty-five miles wide, bordering Lake Michigan in Illinois, will include the field of the present paper. A few species taken during the migrations at Racine, Wisconsin, have been added. Although this locality is not situated within the precise limits of the region to which this paper is limited, it being, however, but a few miles north of the Illinois state line, upon the Lake shore and in the direct line of migration, it would seem extremely improbable that a northward bound species taken at Racine should not have passed through the adjacent portion of Illinois.

Not only is the influence of the Lake upon the fauna shown by the occurrence of numerous species of birds, attracted by the presence of a large body of water with its congenial surroundings, but the influence of the Lake upon the climate and the vegetation in its immediate vicinity, has a marked influence upon the list of summer residents.

As is well known, the country bordering upon the Great Lakes possesses an average lower temperature during summer, and a higher temperature during the winter, than the surrounding districts. This has a decided effect upon the movements and distribution of the birds in the vicinity of these large bodies of water.

This influence is seen in a retardation, often of a week or more, in the spring migration, and in the scarcity of small woodland species during the breeding season. Although birds are exceedingly numerous here during the migrations, and the number of species found during the summer compares favorably with the number found at the same season in other localities having the same latitude, they are represented by decidedly few individuals. This fact is especially noticeable after one has passed a day in the marshes of the vicinity, where the abundance of numerous marsh and water birds, both in species and individuals, would lead one to suppose the woods were equally favored.

The limits of the field discussed in this paper embrace two counties, Cook County upon the south, and Lake County upon the north. Each possesses certain topographical peculiarities. Cook County is mainly prairie land, interspersed with ridges and groves of timber, the former of which generally extend parallel to the Lake shore. Near the south-eastern portion of the county the surface of the prairie is but slightly above the level of the lake. Through this county flows the

Calumet river, along which are extensive marshes, which form a favorite haunt for various waterfowl. Along the Lake shore, in north-western Indiana, extending thence slightly into Illinois, is the Pinery, a peculiar, sandy, barren tract of land partly covered by a sparse growth of pines and deciduous underbrush, with, near the Lake, patches of juniper. Lake County has much more woodland, and is more hilly or rolling than Cook County. Extending along the Lake shore, from the northern border of the state nearly the entire length of this county, is a tract quite similar to the Pinery before described, except that here the sand-hills near the Lake are nearly covered with the junipers (*Juniperus communis*). Throughout this county are scattered a large number of small lakes, many of which have a marshy border and are much frequented by waterfowls, both during the migrations and the breeding season.

The woods near Lake Michigan, in both these counties, are upon ridges extending parallel to the Lake shore, which are separated by belts of prairie. These ridges form convenient highways for the woodland species during the migrations. The water birds either follow the Lake shore or the river courses. The migrations of the latter are almost directly north and south, but with the woodland species it is quite different. They follow the heavily wooded river bottoms from the south, and approach the sparsely wooded states along the upper Mississippi in immense numbers, where they swerve toward the heavily wooded region of the northern Lake region, where they find extensive breeding grounds. This change in the direction of their migration causes them to move diagonally across the northern half of Illinois toward the north-east. To this we are indebted for the vast numbers of migrants found along the Lake in this vicinity. Weary from their flight up the Mississippi and Illinois rivers, they halt along the inviting ridges bordering the Lake. After a short rest they resume their northward way, striking boldly across the Lake towards their summer homes in northern Michigan and beyond. I have many times stood upon a wooded bluff on the Lake shore and seen flock after flock of warblers and other small birds pass out of sight over the Lake.

The fall migration is less uniform, the birds straggling along in such a manner that it is difficult to trace any movement except a general inclination to the south. A severe storm upon the Lake during the spring migration works sad havoc among the birds, for when a fog arises they become bewildered and perish by thousands, and large numbers are washed ashore. An instance of this kind occurred the last of May, 1876, when I counted over two hundred birds, representing over fifty species, in walking about a mile along the Lake shore.

For many valuable notes included in the present paper I am indebted

to Dr. P. R. Hoy, of Racine, Wisconsin; to Dr. H. B. Bannister, of Evanston; to Mr. C. N. Holden, Jr., of Chicago; to Mr. F. T. Jencks, of Providence, R. I., who was my companion in the field during the spring of 1876, and who added materially to my notes; and especially to Mr. F. L. Rice of Evanston, who placed at my disposal notes extending over several years. I am also indebted to Messrs. T. H. and C. W. Douglas, of Waukegan, and to others for valuable notes, which are duly acknowledged in the following pages. My own observations have been continued through the last three years, and have been made in various localities in the two above named counties. The dates of the migrations and nesting given indicate the average of observations continued through several years.

Family **TURDIDÆ.**

Genus **Turdus** Linn.

1. **T. mustelinus** Gmel. WOOD THRUSH. Common summer resident in suitable places. Arrives first of May; nests the last of the month and leaves September first.

2. **T. fuscescens** Steph. WILSON'S THRUSH. Rather rare summer resident. Arrives in small numbers the second week of May and departs the first of September.

3. **T. aliciæ** Bd. ALICE'S THRUSH. Very abundant migrant; frequenting open woods and the borders of adjacent fields. May 1st to 20th; September 1st to October 5th. I have rarely heard this species sing except during damp, gloomy days in spring, when trees and bushes were dripping with a fine misty rain. On such occasions, I have often been greeted by the clear metallic notes of this thrush rising clear and strong, filling the air with a sweet, indescribable melody, and then dying away in measured cadence until the last notes are scarcely distinguishable. As the first strain ends the song is echoed by hidden musicians on every hand, until every tree seemed to give forth the weird music.

4. **T. swainsoni** Caban. SWAINSON'S THRUSH. Abundant migrant and a very rare summer resident. Arrives in spring a few days later than the preceding, and at about the same time in fall. I obtained a specimen near Chicago, June 7th, 1873, and July 9th, the same year, Mr. Rice obtained a second specimen. The song of this species is similar, but much less musical, than that of the preceding.

5. **T. pallasii** Caban. HERMIT THRUSH. Very abundant migrant. April 1st to May 10th, and September 20th to October 31st. Several years since, during the fall migration, one of these birds was brought to me alive, it having entered a neighbor's house in Chicago, through an open window in which were some very large plants. This,

with the two preceding species, frequent vacant lots and grounds containing shrubbery in Chicago, in large numbers during the migrations.

6. *T. migratorius* Linn. ROBIN. Common summer resident. Arrives March 1st in large flocks. The resident birds commence nesting April 15th, and all leave during October and the first part of November.

Genus *Harporhynchus* Cab.

7. *H. rufus* Linn. BROWN THRUSH. Common summer resident. Arrives April 20th, nests the middle of May, and departs in September. That the nest of this species is often placed in trees and bushes for protection against some apparent danger I have no doubt, but in many cases this site is chosen from a mere whim of the bird. I have found in one "scrub oak" grove, on a sandy ridge, some half dozen nests for several seasons in succession, and each year about one-half the nests were in the trees, and the remainder were built at the bases of saplings or bushes, yet I could find no apparent cause for the location of the nests in the trees. The young were in each case reared with equal safety.

Genus *Mimus* Boie.

8. *M. polyglottus* L. MOCKING BIRD. A very rare summer resident. I know of but few instances of its occurrence in the vicinity of Chicago. Dr. Hoy has recorded six nests obtained in the vicinity of Racine, Wisconsin.

Genus *Galeoscoptes* Caban.

9. *G. carolinensis* L. CAT BIRD. Very common summer resident. Arrives May 1st; nests the middle of this month and departs during September.

Genus *Myiadestes* Cab.

10. *M. townsendi* Aud. TOWNSEND'S THRUSH. A single specimen of this species was obtained December 16, 1875, by Mr. Charles Douglas, at Waukegan. The bird was found in a sheltered ravine, extending a short distance into the bluff, bordering the lake shore near the above named place, and showed no alarm when approached. Nothing peculiar was observed concerning its habits except that its movements were very sprightly.

Family **SAXICOLIDÆ.**

Genus *Sialia* Sw.

11. *S. sialis* Bd. BLUE BIRD. Arrives early in March and is abundant, in flocks, until the first of May, when they commence

breeding. The fall migration extends from September 12th to October 25th. Under the date of October 1st, 1876, my friend Mr. N. S. Davis, jr., of Evanston, writes that within a few days he has observed several Blue Birds eating the berries of the wild ivy (*Ampelopsis quinquefolia*), growing near that place.

NOTE.—*S. arctica*. Dr. Hoy informs me that he has seen a specimen of this species, in a collection at Dubuque, Iowa, which was taken, late in the fall, upon the east side of the Mississippi River near that town.

Family SYLVIIDÆ.

Genus *Regulus* Cuv.

12. *R. satrapa* Licht. GOLDEN-CROWNED KINGLET. Abundant migrant. April 1st to May 10th, and October 1st to 31st.

13. *R. calendula* Licht. RUBY-CROWNED KINGLET. Like the preceding, abundant during the migrations, and found everywhere in woods. Several days behind the other species in the spring and in advance in the fall.

Genus *Polioptila* Sclat.

14. *P. cærulea* Sclat. BLUE-GRAY GNATCATCHER. Common migrant. April 27th to May 20th, and August 25th to September 10th. Owing to a lack of heavy timber, few remain to breed.

Family PARIDÆ.

Genus *Lophophanes* Kaup.

15. *L. bicolor* Bonap. TUFTED TITMOUSE. Occurs only during fall and winter, when straggling parties occasionally visit us from Southern Illinois, where it is one of the characteristic species.

Genus *Parus* Linn.

16. *P. atricapillus* Linn. BLACK-CAPPED TITMOUSE. Resident. More numerous during the migrations and in winter.

17. *P. carolinensis* Aud. CAROLINA TITMOUSE. A rare summer visitant to the "Pinery," at the southern end of Lake Michigan.

18. *P. hudsonicus* Forst. HUDSON'S BAY TITMOUSE. A very rare winter visitant. Dr. Hoy observed a small flock near Racine in January, 1852; and Dr. Velie has since observed them at Rock Island, Illinois.

Genus *Sitta* Linn.

19. *S. carolinensis* Lath. WHITE-BELLIED NUTHATCH. Common resident. More abundant during the migrations. Near Wauke-

gan, May 10th, 1876, a pair of these birds were observed carrying material for a nest, into a knot-hole in a large oak, about twenty-five feet from the ground. The hole was large enough to admit my hand, and several inches deep, but filled to within two inches of the top by the remains of an old squirrel's nest. The birds worked steadily for about a week, lining the cavity with small fragments of dry leaves and pieces of rabbits' fur. Just as the nest was finished a pair of flying squirrels took possession of the premises and the birds sought another location.

20. *S. canadensis* Linn. RED-BELLIED NUTHATCH. Rather more numerous early in the migrations than the preceding. April 1st to May 10th, and August 25th to October 30th. A rare summer resident. I found a pair near Chicago with full grown young the first of July, and Mr. Rice observed a pair feeding unfledged young the last of April, 1874, at Evanston. The excavation containing this nest was in a tree, standing on one of the principal streets of the town. It was about twenty feet from the ground. The young were thrusting their heads out of the hole and clamoring for food, thus attracting his attention when they would otherwise have been unnoticed.

Family CERTHIIDÆ.

Genus *Certhia* Linn.

21. *C. familiaris* var. *americana* Bonap. BROWN CREEPER. Common winter resident, arriving October 1st and remaining until May 10th. Particularly abundant the first two weeks of October and of April, when they frequent the streets of Chicago in large numbers, industriously searching the rough brick walls for the small spiders which they find in abundance in the numerous crevices. I have seen as many as a dozen of these birds upon the side of a house at once, moving from place to place as readily as though on the trunk of a tree.

Family TROGLODYTIDÆ.

Genus *Thryothorus* Vieill.

22. *T. ludovicianus* Bonap. GREAT CAROLINA WREN. A rare summer visitant. Abundant in Southern Illinois.

23. *T. bewicki* Bonap. BEWICK'S WREN. Rare summer resident. A pair of these birds appeared in a vacant lot in Chicago the first of June, 1876, and taking possession of a convenient corner in the roof of an arbor proceeded to raise their young. At intervals through the day the male would mount to the top of some house, or the topmost twig of a tree in the vicinity, and sing for an hour or more. The family suddenly left about the middle of July.

Genus *Troglodytes* Vieill.

24. *T. aëdon* Vieill. HOUSE WREN. Rather common summer resident away from the immediate vicinity of the Lake. Arrives the first of May and departs the last of September.

25. *T. parvulus* var. *hyemalis* Vieill. WINTER WREN. A common migrant. April 5th to May 1st, and September 12th to October 20th. I have found this species much more musical during the fall migration than in the spring.

Genus *Cistothorus* Caban.

26. *C. stellaris* Caban. SHORT-BILLED MARSH WREN. Rather common summer resident and generally distributed in suitable places. Breeds last of May. I think the distribution of this species is much more general than is supposed. Owing to the character of the locality in which they are found, and to their shyness, the chances are that they will be overlooked. Before I learned their habits I passed repeatedly through places where I afterwards found they were quite common.

27. *C. palustris* Bd. LONG-BILLED MARSH WREN. Abundant summer resident in marshy localities. Arrives the first of May, nests the last of this month to the first of August. I have seen hundreds of the nests of this species but have yet to see one attached to a bush in the manner described in Baird, Brewer and Ridgway's "North American Birds" (Vol. I, p. 162). The nests I have seen have almost invariably been placed in the midst of tall bulrushes, or wild rice, growing upon a more or less submerged marsh, and are supported about two feet above the surface, by being firmly attached to several of the surrounding stalks, something in the manner of the attachment of the Red-winged Blackbird's nest. The structure of the nests agrees with the description in the above named work, with the exception of mud never being used in nests I have examined. While the female is incubating, the male is almost constantly employed upon the construction of several unfinished nests, until often a pair may boast the possession of a dozen unoccupied tenements. The supernumerary nests are less substantial structures than the one occupied, and are built indifferently of the living or dead grass leaves, the latter being almost exclusively used in the structure occupied.

Family MOTACILLIDÆ.

Genus *Anthus* Bechst.

28. *A. ludovicianus* Licht. TITLARK. Common in flocks along the Lake shore and on bare prairies during the migrations. Arrives about the 15th of May. It is then just assuming the breeding dress,

and remains until about the 30th, when, its moult being completed, it moves north. Returns in October.

Family SYLVICOLIDÆ.

Genus *Mniotilta* Vieill.

29. *M. varia* Vieill. BLACK AND WHITE CREEPER. Not an uncommon summer resident. Abundant in the migrations; April 25th to May 15th, and August 20th to October 10th.

Genus *Protonotaria* Bd.

30. *P. citrea* Bd. PROTHONOTARY WARBLER. A rare summer visitant. Two specimens were taken during the summer of 1875, and I have heard of several other instances of its occurrence. All the specimens taken in this vicinity have remarkably dull colored plumage.

Genus *Helmitherus* Raf.

31. *H. vermivorus* Bonap. WORM-EATING WARBLER. Very rare visitant. A single specimen observed May 21st, 1876, at Waukegan.

Genus *Helminthophaga* Caban.

32. *H. chrysoptera* Caban. GOLDEN-WINGED WARBLER. Comparatively rare. It breeds rarely. Migrates May 15th to 25th, and September 1st to 20th.

33. *H. ruficapilla* Bd. NASHVILLE WARBLER. A rare summer resident. Very common during migrations; May 10th to 24th, and September 5th to 30th, and perhaps later.

34. *H. celata* Bd. ORANGE-CROWNED WARBLER. A common migrant; April 27th to May 20th, and September 15th to October 25th. Frequents bushy hillsides and borders of woods.

35. *H. peregrina* Caban. TENNESSEE WARBLER. Nearly equal to the preceding in numbers, but more difficult to procure during the spring migration, owing to its frequenting the tops of the trees and moving quickly from place to place. Like several other species of warblers which frequent the tops of the trees in spring, it is found much lower in fall, when it may be easily obtained. I have found this true of adults and young of the year. Migrates May 15th to 25th, and August 25th to October 10th.

Genus *Parula* Bonap.

36. *P. americana* Bonap. BLUE-YELLOW-BACKED WARBLER. An abundant migrant from May 8th to 25th, and August 25th to September 20th. Breeds rarely.

Genus *Perissoglossa* Bd.

37. *P. tigrina* Bd. CAPE MAY WARBLER. Very common migrant. May 7th to 25th, and September 5th to 20th. In spring, found almost exclusively in the tops of the trees; in autumn found in large numbers along roadsides, borders of woods and fields in company with *Dendroeca palmarum*, from which it is, with difficulty, distinguished at gunshot, so closely alike are their habits and movements at this season.

Genus *Dendroeca* Gray.

38. *D. æstiva* Bd. YELLOW WARBLER. Abundant summer resident. Arrives May first and departs the last of August and first of September.

39. *D. coronata* Gray. YELLOW-RUMPED WARBLER. An exceedingly abundant migrant; April 1st to May 24th, and September 20th to October 25th.

40. *D. maculosa* Bd. BLACK AND YELLOW WARBLER. Nearly as numerous in the migrations as the preceding. May 8th to 29th, and August 25th to October 10th.

41. *D. cærulea* Bd. CÆRULEAN WARBLER. A regular but rare migrant. May 12th to 20th, and the first of September. Prefers high woods. Very abundant in the southern half of the state. Rare summer resident here, but near Detroit, Michigan, I am informed it is one of the common species at this season.

42. *D. blackburniæ* Bd. BLACKBURNIAN WARBLER. Very abundant during the migrations. May 10th to June 3rd, September 7th to 25th. One of our commonest species during the migrations. The males arrive at least a week in advance of the females.

43. *D. dominica* var. *albilora* Bd. YELLOW-THROATED GRAY WARBLER. A very rare summer visitant from the south. Prof. D. S. Jordan of Indianapolis, Indiana, informs me that this species is a common summer resident in that vicinity, and I have trustworthy information of its rather common occurrence, in summer, in the vicinity of Detroit, Michigan.

44. *D. pennsylvanica* Bd. CHESTNUT-SIDED WARBLER. Abundant migrant; May 1st to 25th; September 1st to 20th. Breeds sparingly away from the Lake.

45. *D. striata* Bd. BLACK-POLL WARBLER. A common migrant; May 15th to 28th, and September 12th to October 1st.

46. *D. castanea* Bd. BAY-BREASTED WARBLER. Abundant migrant; May 8th to 25th. In autumn this species, with the preceding, is found in large numbers everywhere, except upon the open prairies.

47. *D. cærulescens* Bd. BLACK-THROATED BLUE WARBLER. A common migrant; May 12th to 25th, and September 10th to October 20th.

48. *D. virens* *Bd.* BLACK-THROATED GREEN WARBLER. Very common migrant; May 5th to 25th, September 20th to October 12th. A few remain to breed.

49. *D. pinus* *Bd.* PINE-CREEPING WARBLER. Common migrant; April 27th to May 20th, September 15th to October 5th. The first of July, 1874, I found a large number of these birds with young just old enough to follow their parents, in the "Pinery," and presume they nest there regularly.

50. *D. palmarum* *Bd.* YELLOW RED-POLL WARBLER. An abundant migrant; April 25th to May 20th, and September 10th to October 15th.

51. *D. discolor* *Bd.* PRAIRIE WARBLER. A very rare spring and summer visitant, perhaps breeding. But very few specimens have been taken in the vicinity of Chicago. Dr. Hoy writes that he knows of but one instance of its capture in Wisconsin.

Genus *Siurus* *Sw.*

52. *S. aurocapillus* *Sw.* GOLDEN-CROWNED WAGTAIL. An abundant migrant; from May 5th to 20th, September 15th to October 20th. Common resident in all suitable places.

53. *S. noveboracensis* *Nutt.* WATER WAGTAIL. An abundant migrant; April 1st to May 10th, and August 25th to October 25th. Found anywhere in damp woods or along the banks of streams during the migrations. A very few remain to breed in secluded woods.

54. *S. ludovicianus* *Bonap.* LARGE-BILLED WATER WAGTAIL. Not an uncommon summer resident, arriving May 8th to 15th, and leaving the first of September. Much more striking in its habits than the preceding, and prefers dark woods or dense willow patches in wet situations.

Genus *Oporornis* *Bd.*

55. *O. agilis* *Bd.* CONNECTICUT WARBLER. A rather common migrant; May 15th to 27th, and September first to October first. The species occurs in about equal numbers in spring and fall. Near Waukegan, the last of May, 1876, these birds were found frequenting a dense swampy thicket on the border of a wood, in company with *Geothlypis philadelphia* and two species of *Siurus*. They kept close to the ground and were quite difficult to shoot, as they would dart into the thicket upon the slightest alarm. Their habits in this locality were so nearly like those of *G. philadelphia*, that, until actually in hand, it was not an easy matter to distinguish them. While confined to the house by illness, the 26th and 27th of May, Mr. Jencks had the pleasure of becoming still better acquainted with their habits. His attention was first drawn to them by hearing a loud ringing song en-

tirely new to him. Going to the door he saw the author of the song, upon one of the lower branches of a small pine tree close to the house. The specimen was soon in his possession and proved to be this species. Afterwards, during this and the following day, he heard the song repeatedly, and obtained other specimens of the bird. Their note he describes as being a trifle harsh, but pleasant to the ear. It is delivered with force, in a clear ringing manner, slightly resembling that of *G. trichas*. Their habits and movements while about the pine trees — within twenty yards of the house — closely resembled those of *S. aurocapillus*, with which they were associated.

56. *O. formosus* Bd. KENTUCKY WARBLER. A very rare summer visitant from Southern Illinois.

Genus *Geothlypis* Caban.

57. *G. trichas* Caban. MARYLAND YELLOW-THROAT. An abundant resident. Arrives May 8th; departs first of September. Breeds June first.

58. *G. philadelphia* Bd. MOURNING WARBLER. Not common. Migratory. Found in swampy thickets May 15th to 31st, and the first of September.

Genus *Icteria* Vieill.

59. *I. virens* Bd. YELLOW-BREASTED CHAT. A regular but not common summer resident. Arrives May 1st to 10th, and leaves the last of August. Nests in hazel thickets.

Genus *Myiodioides* Aud.

60. *M. mitratus* Aud. HOODED WARBLER. A rare summer resident; arriving May 10th to 20th, and leaving early in autumn.

61. *M. pusillus* Bonap. GREEN BLACK-CAPPED WARBLER. A common migrant; May 7th to 25th, and the first of September. Found along the borders of woods and about willow patches.

62. *M. canadensis* Aud. CANADA WARBLER. A common migrant; May 15th to 29th, and the first of September. Rare summer resident.

Genus *Setophaga* Swains.

63. *S. ruticilla* Swains. REDSTART. An abundant migrant; May 10th to 25th, and in September. Also a Common summer resident in damp woods.

Family HIRUNDINIDÆ.

Genus *Progne* Boie.

64. *P. subis* Bd. PURPLE MARTIN. A very common summer

resident in towns. Arrives April 10th to 30th; departs the first of September.

Genus *Petrochelidon* *Caban.*

65. *P. lunifrons* Bd. CLIFF SWALLOW. An abundant migrant; May 1st to 10th, and the first of September. Also a common summer resident.

Genus *Hirundo* *Linn.*

66. *H. horreorum* Bart. BARN SWALLOW. A very common summer resident; arrives April 15th to May 10th; departs the first of September.

67. *H. bicolor* Vieill. WHITE-BELLIED SWALLOW. Common resident. Arrives in large numbers March 20th. The first of May only residents remain. Departs in September. This species still keeps its primitive habit of nesting in deserted woodpecker's holes, hollow stumps and similar places, generally close to some stream or body of water. Several times during the spring I have seen these birds occupy martin houses for several weeks until the owners returned, when, after a desperate battle they would leave. Have never observed them about the town during the breeding season.

Genus *Stelgidopteryx* *Bd.*

68. *S. serripennis* Baird. ROUGH-WINGED SWALLOW. A rare summer visitant, perhaps breeds.

Genus *Cotyle* *Boie.*

69. *C. riparia* Boie. BANK SWALLOW. Abundant summer resident. Arrives May 7th; departs September first. Nests in the sand-hills and clay bluffs along the Lake shore.

Family *VIREONIDÆ.*

Genus *Vireo* *Vieill.*

70. *V. olivaceus* Bonap. RED-EYED VIREO. Common summer resident. Arrives May 15th and departs the last of September and first of October. I have found the irides, indifferently, red or brown, in spring specimens of this species.

71. *V. philadelphicus* Cass. PHILADELPHIA VIREO. A common migrant; May 15th to 25th, and September 5th to 25th. While passing in the spring these birds frequent either willow thickets or high woods. They were so numerous near Waukegan about the 20th of May, 1876, that a dozen specimens might have been obtained in an hour. The first of July, 1874, I found two pairs of these birds in a

dense willow thicket bordering Mazon Creek, about sixty miles south of Chicago. Upon my approach the birds showed great anxiety, uttering a short complaining cry, and coming within a few feet of me. That they had young in the vicinity I was sure, but owing to the character of the covert they were not found. Specimens of this species may invariably—as far as my experience goes—be separated from those of *V. gilvus* by the greater intensity of yellow on the former, as well as by the quill characters.

72. *V. gilvus* Cass. WARBLING VIREO. A common summer resident. Arrives May 8th to 15th; departs in September.

73. *V. solitarius* Bd. BLUE-HEADED VIREO. An abundant migrant; May 5th to 25th, and the last of September and first of October. Found everywhere in the woods and thickets.

74. *V. flavifrons* Bd. YELLOW-THROATED VIREO. A common migrant and not uncommon summer resident. May 8th to 24th, and September 10th to October 15th.

75. *V. noveboracensis* Bonap. WHITE-EYED VIREO. Summer resident. Rather rare. Arrives the middle of May and departs the first of October. Very common in Southern Illinois.

76. *V. belli* Aud. BELL'S VIREO. A single specimen, obtained near Chicago, June 23, 1875, is the only instance I have recorded of its occurrence in this vicinity. It is a common summer resident on the more southern prairies of the state.

Family **AMPELIDÆ.**

Genus ***Ampelis* Linn.**

77. *A. garrulus* Linn. BOHEMIAN WAXWING. An irregular but occasionally abundant winter resident, especially along the lake. Arrives in December and sometimes remains until April. The winter of 1875-6 they were unusually numerous. In a letter dated March 16, 1876, Mr. Charles Douglas, of Waukegan, describes an "immense" flock of these birds which he observed the day previous, upon the lake shore near that town. The birds were feeding upon the juniper berries found there, and covered, according to Mr. Douglas's estimation, an area at least ten rods square. While feeding, those in the rear were continually flying and alighting in advance, thus keeping the flock moving so that it was difficult to overtake them. A few days later the flock separated into numerous smaller ones and soon departed for the north.

78. *A. cedrorum* Scf. CEDAR BIRD. Common summer resident. Arrives the last of February, breeds from the first of June until the middle of July; leave late in autumn.

Family LANIIDÆ.

Genus *Collurio* Vigors.

79. *C. borealis* Bd. GREAT NORTHERN SHRIKE. Regular winter resident. Arrives the last of October and generally departs the last of March. Sometimes they remain late in the season and may breed.

80. *C. ludovicianus* var. *ludovicianus* Linn. LOGGERHEAD SHRIKE. Common summer resident throughout the state. I have obtained its nest with a full set of eggs early in April, near Chicago. It generally arrives about the middle of March.

A small series of shrikes from the northern and southern extremes of the state have been submitted to my friend, Mr. J. A. Allen, who replies as follows: "They all belong decidedly to var. *ludovicianus*, though somewhat lighter than Florida specimens, with smaller bills, etc. There is a slight approach in some of them to *excubitoroides*, but the resemblance to Florida specimens is far greater than to specimens from the West — Wyoming, Utah, Colorado, etc." During the past two years I have examined a large number of shrikes from northern Illinois, and have found them, in nearly all cases, to be much nearer *ludovicianus* than *excubitoroides*. Specimens obtained in the Wabash Valley and other parts of Southern Illinois, exhibit the same characteristics in about equal proportion, as far as the number of specimens seen would permit me to judge.

80a. Var. *excubitoroides* also occurs throughout the state, especially upon the prairies, but is much less numerous than the eastern form. Their habits are identical.

Family TANAGRIDÆ.

Genus *Pyranga*.

81. *P. rubra* Vieill. SCARLET TANAGER. Common summer resident. Arrives May 8th and leaves early in autumn.

82. *P. æstiva* Vieill. SUMMER RED-BIRD. A rare summer visitant. I know of but few instances of its occurrence.

Family FRINGILLIDÆ.

Genus *Hesperiphona* Bonap.

83. *H. vespertina* Bonap. EVENING GROSBIRD. A winter visitant occurring at irregular intervals. The winter of 1871 they were quite common throughout the northern portion of the state. The following winter they were much rarer, and since then but very few have been seen. I am told that formerly, it was of much more regular occurrence.

Genus *Pinicola* Vieill.

84. *P. enucleator* Cab. PINE GROSBK. Formerly common; now a rare winter visitant.

Genus *Carpodacus* Kaup.

85. *C. purpureus* Gray. PURPLE FINCH. Common winter resident; a few breed. Arrives from the north in flocks the last of October, and remains until April.

Genus *Chrysomitris* Boie.

86. *C. tristis* Bonap. GOLDFINCH. Common resident. The winter dress is assumed the last of October and retained until the first of May.

87. *C. pinus* Bonap. PINE FINCH. A common winter resident associating with the preceding. Arrives the last of October and departs the last of May. Prof. Jordan informs me that he has taken a specimen near Indianapolis in midsummer.

Genus *Loxia* Linn.

88. *L. curvirostra* var. *americana* Bd. RED CROSSBILL. Formerly a common winter resident; now rare.

89. *L. leucoptera* Gmel. WHITE-WINGED CROSSBILL. Like the preceding, a winter resident of rare occurrence at present.

Genus *Ægiolophus* Caban.

90. *Æ. linarius* Caban. LESSER RED-POLL. An abundant winter resident. Arrives in flocks the last of October, and remains until the last of March.

91. *Æ. canescens* Caban. MEALY RED-POLL. A rare winter visitant with the preceding.

Genus *Plectrophanes* Meyer.

92. *P. nivalis* Meyer. SNOW BUNTING. An abundant winter resident. Arrives in flocks the first of November and remains until about the middle of March. The 5th of March, 1875, I saw a flock of these birds in a tree in Chicago. The males were chanting a very low, and somewhat broken, but very pleasant song, bearing considerable resemblance to that of *Spizella monticola*. This and the following species, as well as other winter residents, appear a week or more earlier in the fall and depart later in spring, in the vicinity of the Lake than in other parts of the state in the same latitude.

93. *P. lapponicus* Selby. LAPLAND LONGSPUR. A very abundant winter resident in the prairie districts of the state. Arrives in

straggling flocks from October 1st to 10th, and remains until the first of May. During the last of March and first of April, large straggling flocks pass north. An unusually large flight took place the 20th of March, 1873. A continuous series of large flocks occupied over two hours in passing. Those remaining after the middle of April are in breeding plumage.

94. *P. pictus* Swains. PAINTED LONGSPUR. Common migrant. March 30th, 1875, near Calumet Lake, I found a flock containing about seventy-five individuals of this species. Their habits were quite similar to those of *P. lapponicus* while upon the ground, except that while the latter species preferred the wet portions of the prairie, the former were found only about the higher portions. When flushed they invariably uttered a sharp clicking note, rapidly repeated several times. When driven from their feeding-place by my approach, they would rise, in a loose flock, and after wheeling about a few times start off in a direct line, gradually rising higher until they disappeared. After a short time their peculiar note would be heard, and darting down from a considerable height they would alight near the place from which they were driven. Although the flocks of *P. pictus* and *P. lapponicus* often became mingled while flying over the prairie, I did not see them alight together.

Genus *Pyrgita* Cuvier.

95. *P. domestica* Cuv. HOUSE SPARROW. Introduced into Chicago a few years since and has become very numerous throughout the city.

Genus *Passerculus* Bonap.

96. *P. savanna* Bonap. SAVANNA SPARROW. Plentiful during migrations, from April 1st to May 20th, and September 15th to October 25th. Not an uncommon summer resident.

Genus *Poocætes* Bd.

97. *P. gramineus* Bd. GRASS FINCH. Abundant summer resident. Arrives March 25th to April 10th, and departs the last of September. Large numbers nest on the ground among the junipers and other low bushes along the Lake shore.

Genus *Ammodromus* Sw.

98. *A. henslowi* Bonap. HENSLOW'S BUNTING. Rather common summer resident upon the prairies. Arrives May 12th to 20th, and leaves the first of September. A very inconspicuous species that may be easily overlooked. Has a peculiar, weak, squeaky song, consisting of several short notes. Nests the last of May.

99. *A. lecontei* Bonap. LECONTE'S BUNTING. A rare migrant.

I obtained a fine specimen May 13th, 1875, at Riverdale, Illinois, and by my notes I see that a second specimen was observed the 21st of the same month near where the first was obtained. The specimen in my possession was flushed from a small depression in the prairie near the Calumet river, where the moisture had caused an early growth of coarse grass, about three inches in height. After darting off in an erratic course a few rods, it suddenly turned, and alighting ran rapidly through the grass, from which it was with difficulty started again and secured.

100. *A. passerinus* Bonap. YELLOW-WINGED SPARROW. One of our most abundant summer residents. Found everywhere in fields and on prairies, from the middle of May until first of September.

101. *A. caudacutus* var. *nelsoni* Allen. NELSON'S SHARP-TAILED FINCH. First obtained September 17th, 1874, in the Calumet Marsh, where it was abundant at the time. The 12th of June, 1875, I saw several of these birds in the dense grass bordering Calumet Lake, where they were undoubtedly breeding. The first of October, 1875, I again found them abundant on the Calumet Marsh, and also found them numerous in the wild rice bordering Grass Lake, Lake County, Illinois, the 10th of November the same year. Prof. S. A. Forbes has taken them on the Illinois River during the migrations, and Dr. Hoy has obtained a single specimen at Racine. From the numbers which visit us in fall, they must breed in abundance north of this state. They are difficult to obtain as they take refuge in the dense marsh grass upon the first alarm. Occasionally one mounts a tall reed and utters a short unmusical song, slightly resembling that of the Swamp Sparrow (*M. palustris*).

Genus *Chondestes* Sw.

102. *C. grammaca* Bonap. LARK FINCH. A common summer resident. Arrives the last of April or first of May, nesting the last of this month; departs August 25th to September 10th. Frequents barren fields and borders of prairies containing a sparse growth of small trees and rank weeds. Its nest is generally placed at the foot of some rank weed in a bare piece of ground. My observations regarding the song and general habits of the species, coincide with those of Mr. Ridgway as given in North American Birds (Vol. I, p. 564).

Genus *Zonotrichia* Sw.

103. *Z. leucophrys* Sw. WHITE-CROWNED SPARROW. Common migrant; March 20th to May 15th, and September 20th to October 25th. Frequents borders of cultivated fields and hedges.

103a. Var. *intermedia* Ridg. The 20th of April, 1871, a specimen of this form was obtained near Racine by Dr. Hoy. The specimen

has been kindly loaned me for examination, and is without doubt a perfectly authentic example of this variety. The lores are almost white, considerably lighter than in average specimens of *intermedia*.

104. *Z. coronata* Bd. GOLDEN-CROWNED SPARROW. A beautiful male specimen of this species was obtained the middle of April, 1858, by Dr. Hoy in his garden at Racine. The specimen was first identified by Mr. Cassin. This specimen was loaned me with the preceding, and upon comparison I find it differs but very slightly from California specimens of the same species in my collection.

105. *Z. albicollis* Bonap. WHITE-THROATED SPARROW. Very abundant migrant, and rare summer resident. Migrates April 20th to May 25th, and September 20th to October 30th.

106. *Z. querula* Gamb. HARRIS'S FINCH. A very rare visitant. There is a specimen in Dr. Hoy's collection, taken at Racine, May, 1856.

Genus *Junco* Wagl.

107. *J. hyemalis* Sclat. SNOW BIRD. Found everywhere in town and country, in the greatest abundance during the migrations; March 15th to May 5th and September 15th to October 30th. A few remain during winter.

Genus *Spizella* Bonap.

108. *S. monticola* Bd. TREE SPARROW. Abundant winter resident about thickets and in marshes. Arrives the 15th of October and departs the 1st of April. The first of March they collect in large flocks and are very musical. Often a large portion of the flock will unite in song which, although it may be more than equalled later in the season, yet, coming as it does between winter and spring, and so touchingly plaintive, one involuntarily stops to listen with a peculiar feeling of pleasure.

109. *S. pusilla* Bonap. FIELD SPARROW. Common summer resident. Arrives April 15th to May 1st, and leaves the last of September. Nests in large numbers in low bushes along the lake shore.

110. *S. socialis* Bonap. CHIPPING SPARROW. A common, but not abundant, summer resident. Arrives the first of April and leaves during October. Mr. Rice has obtained a nest of this species placed in a bunch of grass upon the ground, and in May, 1873, I found a nest placed directly upon the ground at the foot of a coarse weed. In each case the nest contained eggs and the parents were seen.

111. *S. pallida* Bonap. CLAY-COLORED SPARROW. A rare summer resident about the borders of prairies. Specimens are in Mr. Holden's collection taken near Chicago.

Genus *Melospiza* *Bd.*

112. *M. melodia* *Bd.* SONG SPARROW. A common summer resident, but, like the Chipping Sparrow, is far less numerous than in the Atlantic states in the same latitude. Arrives early in March, nests in May and departs in October.

113. *M. lincolni* *Bd.* LINCOLN'S FINCH. Common during the migrations from May 8th to 20th and September 20th to October 15th. Have seen several specimens during the breeding season, and the last of May, 1875, as I was walking through a patch of weeds, a female started from a few feet in advance of me, while my attention was attracted in another direction, and ran off with half-spread wings. It was shot and showed unmistakable signs of incubation, but a protracted search failed to reveal the nest. Specimens were taken in July, 1875, near Waukegan, by Mr. Rice.

114. *M. palustris* *Bd.* SWAMP SPARROW. An abundant summer resident, far outnumbering *M. melodia*, although to one who has not frequently visited its favorite marshes at all seasons, this would seem improbable. Arrives the last of March and departs the last of October.

Genus *Passerella* *Sw.*

115. *P. iliaca* *Sw.* FOX-COLORED SPARROW. Common in the migrations from March 15th to the 1st of May, and September 25th to November 12th. Frequents damp woods and thickets.

Genus *Euspiza* *Bonap.*

116. *E. americana* *Bonap.* BLACK-THROATED BUNTING. A common, and in some localities an abundant, summer resident. Arrives the second week of May and nests during June. Departs during August. Shows a decided preference for orchards and fields grown up with tall weeds. In orchards the nests are generally built in the shoots growing about the base of the trees, and placed about six inches from the ground. In fields I have sometimes found them placed in a depression in the ground. The nests are occasionally visited by Cow-buntings, but whether the strange egg is incubated or not I have not learned.

Genus *Hedymeles* *Cab.*

117. *H. ludovicianus* *Sw.* ROSE-BREASTED GROSBEEK. Rather common summer resident. Arrives 8th to 20th of May, and leaves early in autumn.

Genus *Cyanospiza* *Bd.*

118. *C. cyanea* *Bd.* INDIGO BIRD. Common summer resident. Arrives May 8th to 20th in small flocks, and leaves the last of September and first of October.

Genus *Cardinalis* Bonap.

119. *C. virginianus* Bonap. CARDINAL GROSBEEK. A rare and irregular summer resident. Occasionally specimens remain until late in autumn.

Genus *Pipilo* Vieill.

120. *P. erythrophthalmus* Vieill. TOWHEE. Common summer resident. Arrives March 25th to April 15th; departs the last of October.¹

Family ALAUDIDÆ.

Genus *Eremophila* Boie.

121. *E. alpestris* Boie. SHORE LARK. The history of this species in Illinois is somewhat complex. Two current and readily distinguishable varieties are found during the winter, one of which is also found in summer. Aware of their identity, yet wishing confirmation, I sent Mr. Ridgway specimens of the two. The winter resident he pronounced typical var. *alpestris*, and the permanently resident form var. *leucolæma* Cs.

121a. Var. *alpestris* arrives in large numbers with the Longspurs in October and disperses over the prairies, where its habits are essentially the same as those of *leucolæma*, with which it associates to a certain extent. During April it again unites with the Longspurs, and the last of the month departs for its more northern breeding grounds.

121b. Var. *leucolæma* Cs. is a permanent resident, found in equal numbers throughout the year. Sometimes the last of February and regularly during March and April the first set of eggs are deposited, and early in May the fully fledged young commence to appear. After a short rest the female hands the guidance of the young over to the male and resumes her work on a second set of eggs. When the second brood are able to follow, the party wander wherever inclination leads through the fall and winter, until the breeding season again approaches, when they disband.

A remarkable characteristic of the young of *leucolæma* from Illinois is that they are exactly like the young of *alpestris*, although the young of the two varieties are, usually, even more distinct than the adults. So closely like the young of *alpestris* are they, that Mr. Ridgway had labelled young specimens from this vicinity, and from Southern Illinois, "*alpestris*," and supposed this to be the resident variety until he received the adults above mentioned.

¹Through Dr. Hoy I learn that two specimens of *P. arcticus* have been taken in Wisconsin, one near Milwaukee, where it is now preserved, and a second opposite Dubuque, Iowa. He has seen both specimens and is positive of their identity.

Family **ICTERIDÆ.**Genus **Dolichonyx** Sw.

122. **D. oryzivorus** Sw. BOB-O-LINK. Abundant summer resident. Arrives the last of April and leaves the middle of August.

Genus **Molothrus** Sw.

123. **M. pecoris** Sw. COW BUNTING. Common summer resident. Arrives the last of March and leaves in October.

Genus **Agelæus** Vieill.

124. **A. phœniceus** Vieill. RED-WINGED BLACKBIRD. An excessively abundant summer resident. Arrives the middle of March and leaves late in fall. During October and part of November this species, in company with the Purple Grackle, forage among cornfields during the day, and at night enter the large marshes to roost in myriads.

Genus **Xanthocephalus** Bonap.

125. **X. icterocephalus** Bd. YELLOW-HEADED BLACKBIRD. Very common summer resident in large marshes. Arrives the first of May. Commences nesting the last of this month. Owing to the restricted localities inhabited by this bird, it is very slightly known among farmers; even those living next the marshes generally think it an uncommon bird. My observations regarding the actions of the males during incubation do not agree with those of Dr. Coues (Birds of the North-west, p. 190). The only difference between the habits of male and female is the slightly additional shyness of the former. Their nests vary endlessly in size, from four to twelve inches in depth, although the latter size is rather uncommon.

Genus **Sturnella** Vieill.

126. **S. magna** Sw. MEADOW LARK. Abundant summer resident. Arrives the first of March and leaves the last of October. In mild winters a few are resident.

126a. **S. magna** var. **neglecta** Aud. WESTERN LARK. A regular but rather rare summer resident upon prairies. A more frequent visitant during the migrations. A fine specimen is in the collection of my friend Mr. A. W. Brayton, taken near Chicago the last of May, 1876. This form is probably a common summer resident upon the prairies in the western portion of the state.

Genus **Icterus** Briss.

127. **I. spurius** Bonap. ORCHARD ORIOLE. Rather common summer resident. Arrives May 12th, leaves early in autumn.

128. *I. baltimore* Daud. BALTIMORE ORIOLE. Common summer resident. Arrives May 8th and departs in September.

Genus *Scolecophagus* Sw.

129. *S. ferrugineus* Sw. RUSTY BLACKBIRD. Very common in spring and fall, from March 25th to May 1st, and from September until the middle of November. Frequents borders of streams and ponds in large numbers.

130. *S. cyanocephalus* Cab. BREWER'S BLACKBIRD. A very rare visitant in company with the preceding.

Genus *Quiscalus* Vieill.

131. *Q. pupureus* var. *æneus* Ridg. PURPLE GRACKLE. A common summer resident. Arrives the middle of March, and departs late in autumn.

Family CORVIDÆ.

Genus *Corvus* Linn.

132. *C. corax* var. *carnivorus* Bartr. RAVEN. Formerly a not uncommon resident; now occurs only in winter and is rare. Frequents the sand hills along the Lake shore from the last of October until spring. The first of November, 1875, I saw several specimens near Waukegan, where they were repeatedly seen flying along the Lake shore, and also eating the dead fish found there.

133. *C. americanus* Aud. CROW. Resident. This is far from an abundant species in Northern Illinois, at any season or locality. A small number breed in the low pines on the sand hills along the Lake shore, and in winter they unite in small flocks and move from place to place.

Genus *Pica* Cuv.

134. *P. caudata* var. *hudsonicus* Bonap. MAGPIE. "Not uncommon in winter." (Kennicott.) I have no record of its occurrence other than the above, and its capture many years since near Racine, Wisconsin, by Dr. Hoy.

Genus *Cyanura* Sw.

135. *C. cristata* Sw. BLUE JAY. Very common resident. Have taken its eggs the 25th of April. At a farm-house near Waukegan, where I passed the spring of 1876, these birds were protected, and in consequence were very familiar. Some six or eight nests were built in the small pine trees within a few yards of the house, one of which was composed almost entirely of fragments of cloth, strings, and

other soft material found in the yard, scarcely a stick being used in the entire structure. Mr. Rice informs me that a few years since they nested abundantly in the shrubbery in Evanston, but within a few years they have resumed their primitive habits and nest in the woods away from the town.

Genus *Perisoreus* Bonap.

136. *P. canadensis* Bonap. CANADA JAY. Before the pine forest extending along the Lake shore, in the northern extreme of the state, was destroyed, this species was in all probability a regular winter visitant. Dr. Hoy obtained specimens near Racine in the winter of 1859.

Family TYRANNIDÆ.

Genus *Tyrannus* Cuv.

137. *T. carolinensis* Bd. KING BIRD. A common summer resident. Arrives the first of May and departs early in autumn. In the summer of 1875, Mr. Rice saw one of these birds plunge repeatedly into a stream in the manner of a Kingfisher. Shooting the specimen he found its stomach contained aquatic insects.

Genus *Myiarchus* Cab.

138. *M. crinitus* Cab. GREAT-CRESTED FLYCATCHER. Rather common summer resident. Arrives the middle of May and departs in September.

Genus *Sayornis* Bonap.

139. *S. fuscus* Bd. PEWEE. A common summer resident. Arrives the first of April and departs late in autumn.

140. *S. sayus* Bd. SAY'S PEWEE. Two specimens of this species are registered in the catalogue of birds in the Museum of the Northwestern University, at Evanston, from "West Northfield, Illinois, collected by R. Kennicott." These specimens are not in the collection at present. Dr. Hoy has also taken it in Wisconsin.

Genus *Contopus* Cab.

141. *C. borealis* Bd. OLIVE-SIDED FLYCATCHER. Not an uncommon migrant, from May 15th to 25th, and the last of September and first of October. I have taken one specimen as late as June 2nd. It may breed.

142. *C. virens* Cab. WOOD PEWEE. A very common summer resident. Arrives the middle of May and leaves the last of September.

Genus *Empidonax* Cab.

143. *E. pusillus* var. *trailli* Bd. TRAILL'S FLYCATCHER. An uncommon summer resident. Arrives May 8th and departs in September.

144. *E. minimus* Bd. LEAST FLYCATCHER. Common summer resident. Arrives and departs with *E. trailli*.

145. *E. acadicus* Bd. ACADIAN FLYCATCHER. A rare summer resident. Arrives a little later than the preceding.

146. *E. flaviventris* Bd. YELLOW-BELLIED FLYCATCHER. A common migrant; May 15th to 25th, and September until the 1st of October. The first of July, 1873, I found them quite common in a dense swampy thicket in Northern Indiana, where they had probably nested.

Family Alcedinidæ.

Genus *Ceryle* Boie.

147. *C. alcyon* Boie. KINGFISHER. Common summer resident along streams and ponds. Arrives the last of March and departs the last of November.

Family CAPRIMULGIDÆ.

Genus *Chordeiles* Sw.

148. *C. popetue* Bd. NIGHT HAWK. A common summer resident. Arrives the 10th of May and departs in immense flights, often lasting several hours, the 1st of September.

148a. Var. *henryi* Cass. First obtained in this vicinity by Mr. Rice, near Waukegan, July, 1875. The spring of 1876, I found these birds breeding, with var. *popetue*, in considerable numbers among the sand hills on the Lake shore, near Waukegan. I should judge that the two forms existed in about equal numbers at that place. They are, however, less common in other localities I have visited. Among the specimens examined were individuals that exhibited a perfect intergradation of the two forms. Some specimens would have the white patch on the wings like those in typical *henryi*, while the tail was marked as in *popetue*, and vice versa. Other specimens showed a varying degree of white, on the wings and tail, between the two varieties. In none is the lightness of the back quite so prominent as in specimens from the western plains.

Genus *Antrostomus* Gould.

149. *A. vociferus* Bonap. WHIP-POOR-WILL. Common summer resident. Arrives the last of April and departs in September.

Family **CYPSELIDÆ.**Genus *Chætura* Steph.

150. *C. pelagica* Bd. SWIFT. Common in summer. Arrives the first of May and departs the last of August and first of September.

Family **TROCHILIDÆ.**Genus *Trochilus* Linn.

151. *T. colubris* Linn. RUBY-THROATED HUMMER. Common summer resident. Arrives May 10th to 18th and departs the last of September.

Family **CUCULIDÆ.**Genus *Coccygus* Vieill.

152. *C. americanus* Bonap. YELLOW-BILLED CUCKOO. Rather common summer resident. Arrives the middle of May and departs the first of September.

153. *C. erythrophthalmus* Bon. BLACK-BILLED CUCKOO. Common in summer during the same time as the preceding. Arrives perhaps a few days earlier. The two species are of irregular distribution, and are not generally found together in the breeding season.

Family **PICIDÆ.**Genus *Picus* Linn.

154. *P. villosus* Linn. HAIRY WOODPECKER. Resident. More abundant in winter. Rather uncommon in summer.

155. *P. pubescens* Linn. DOWNY WOODPECKER. Resident. Much more numerous at all seasons than the preceding.

Genus *Picoides* Lac.

156. *P. arcticus* Gray. BLACK-BACKED THREE-TOED WOODPECKER. Rare winter visitant. A specimen was shot from a telegraph pole, in Chicago, a few years since, by Dr. Velie. It is a common species in Northern Wisconsin, and before the pines along the Lake were destroyed was probably a regular winter visitant to this state.

Genus *Sphyrapicus* Bd.

157. *S. varius* Bd. YELLOW-BELLIED WOODPECKER. Very common in the migrations from March 25th to the middle of May, and the middle of September to October 10th. Males in spring often have the white nuchal band tipped with red much as in var. *nuchalis*. In

the collection of Mr. C. N. Holden is a fine specimen obtained at Chicago, which has the red extending over the head and neck much like the distribution of color in *S. ruber*, but of a much lighter shade.

Genus *Hylotomus* Baird.

158. *H. pileatus* Bd. PILEATED WOODPECKER. A rare winter visitant. Two specimens were taken near Chicago during the winter of 1873.

Genus *Centurus* Sw.

159. *C. carolinus* Bon. RED-BELLIED WOODPECKER. A rare summer resident. Not very uncommon during the migrations. Departs the last of October.

Genus *Melanerpes* Sw.

160. *M. erythrocephalus* Sw. RED-HEADED WOODPECKER. The majority of these birds move south the last of September and first of October, returning the last of April. A few, generally young of the year, remain through the winter.

Genus *Colaptes* Sw.

161. *C. auratus* Sw. YELLOW-SHAFTED WOODPECKER. Very common summer resident. Arrives the last of March and in April; departs by the first of October.

Family PSITTACIDÆ.

Genus *Conurus* Kuhl.

162. *C. carolinensis* Kuhl. CAROLINA PARRAKEET. Formerly occurred. Specimens were taken in this vicinity by R. Kennicott many years ago, and Dr. H. M. Bannister informs me that he has seen it in this vicinity.

Family STRIGIDÆ.

Genus *Strix* Linn.

163. *S. flammea* var. *pratincta* Bon. BARN OWL. Very rare visitant. A pair were caught in a trap near Chicago some years since by Mr. C. H. Smith.

Genus *Otus* Cuv.

164. *O. vulgaris* var. *wilsonianus* Less. LONG-EARED OWL. Not uncommon. Resident. Remains concealed during the day in willow thickets and in similar situations.

165. *O. brachyotus* Steph. SHORT-EARED OWL. The most abundant species of the family. Arrives from the north in large numbers the first of November and disperses through the state. They are common everywhere, on prairies and marshes, during the winter. Remain concealed in a bunch of grass or reeds until about two o'clock, P.M., when they commence flying low over the ground in search of their prey. When approached, while standing on the ground, they crouch and try to escape observation much in the manner of the Burrowing Owl. They are very harmless and are easily tamed.

Genus *Syrnium* Sav.

166. *S. cinereum* Aud. GREAT GRAY OWL. A very rare winter visitant.

167. *S. nebulosum* Gray. BARRED OWL. Owing to the lack of heavy timber this is a rare species in this vicinity. Only two instances of its capture have come under my observation.

Genus *Nyctale* Brehm.

168. *N. acadica* Bon. ACADIAN OWL. Not an uncommon species. Is of frequent occurrence in Chicago, where, upon some of the most frequented streets in the resident portion of the town, over a dozen specimens have been taken within two years. Whether resident or not I have been unable to determine.

Genus *Scops* Sav.

169. *S. asio* Bonap. MOTTLED OWL. Rather common. Resident. Often strays into Chicago and becomes confused, when they may be captured alive, as has also been the case with several specimens of the preceding species.

Genus *Bubo* Dum.

170. *B. virginianus* Bonap. HORNED OWL. Not common. Resident. Formerly common.

170a. Var. *arcticus* Sw. A rare winter visitant. Have a fine specimen in my collection, taken the last of December, 1874.

171. *Nyctea scandiaca* var. *arctica* Gray. SNOWY OWL. Regular winter resident. More numerous in the vicinity of the Lake. Arrives in November and a few remain as late as the first of May.

Genus *Surnia* Dum.

172. *S. ulula* var. *hudsonica* (Gmelin). HAWK OWL. Rare winter resident. Dr. J. W. Velie tells me that he obtained a specimen in Kane County, Illinois, the first of September, 1869.

Family **FALCONIDÆ.**Genus **Falco** *Auct.*

173. **F. communis** var. **anatum** *Bonap.* DUCK HAWK. Not uncommon during the migrations. Formerly a rare summer resident.

174. **F. lithofalco** var. **columbarius** *Linn.* PIGEON HAWK. Abundant migrant, from March 20th to May 1st, and from September 15th to October 5th. Rare summer resident.

175. **F. sparverius** *Linn.* SPARROW HAWK. Abundant migrant and rather common summer resident. Arrives early in March and departs the last of September and first of October.

Genus **Pandion** *Sav.*

176. **P. haliaetus** var. **carolinensis** (*Gmel.*). FISH HAWK. Not uncommon during March and April in spring, and during September and October in fall. Some seasons this species is quite numerous, especially along the Lake shore.

Genus **Nauclerus** *Vig.*

177. **N. forficatus** *Ridg.* SWALLOW-TAILED HAWK. According to Kennicott (Ill. Agl. Rept., 1853-4) this beautiful species was once common in this vicinity, but was rare at the time he wrote. I can testify to its scarcity at present, only two or three instances of its occurrence within the last twenty years having been ascertained.

Dr. Hoy has noted *Ictinia mississippiensis* in Wisconsin, but I have no record of its occurrence in this vicinity, although it may yet be observed here.

Genus **Circus** *Lac.*

178. **C. cyaneus** var. **hudsonius** (*Linn.*). MARSH HAWK. Common in the marshes and on prairies during the migrations; March 25th to April 15th, and during October and November. Said to breed by Kennicott, but I have never seen a specimen here in the breeding season.

Genus **Nisus**.

179. **N. fuscus** *Kaup.* SHARP-SHINNED HAWK. Abundant during migrations; September 15th to October 30th, and April 15th to May 10th. A few remain to breed.

180. **N. cooperi** *Bonap.* COOPER'S HAWK. Common summer resident. Arrives the last of April and departs the last of September or first of October.

Genus **Astur** *Lac.*

181. **A. palumbarius** var. **atricapillus** (*Wils.*). GOSHAWK.

Formerly a common winter resident; now very rare. Dr. A. L. Marcy, of Evanston, found them quite plentiful during the winter of 1870-71, and obtained specimens. The only time I ever saw the bird alive, was the 3rd of May, 1876, at Waukegan, when a fine adult specimen passed slowly overhead and disappeared toward the north.

Genus *Buteo* *Cuv.*

182. *B. pennsylvanicus* (*Wils.*). BROAD-WINGED HAWK. Not uncommon the first of May and during September. A few breed.

183. *B. swainsoni* *Bonap.* SWAINSON'S HAWK. Of rather rare occurrence in this vicinity. Have only noted it during the migrations. I obtained an immature specimen May 30, 1875, at Riverdale, Ill., and have since seen others. As this species breeds in Southern Illinois it probably also breeds in the northern portions of the State.

184. *B. lineatus* *Gmel.* RED-SHOULDERED HAWK. Common during the migrations. Mr. R. Kennicott speaks of an immense flight of this species, consisting of thousands, which passed over Chicago, "in October, 1854." The main fall migration of hawks in this vicinity takes place the last of September or first of October, and a statement of the numbers which pass in a single day, to one who has not observed them, would be received with incredulity. Choosing a day when there is a strong south or south-west wind, the hawks commence moving south early in the morning and continue flying the entire day, and so numerous that, taking a stand at a good point, one would have from one to fifty hawks in view, with but very few intermissions, throughout the day. Among these occur all the migrants, but by far the greater number consist of the smaller species.

185. *B. borealis* var. *borealis* (*Gmel.*). RED-TAILED HAWK. The most common resident among the larger Raptores, and very numerous during the migrations.

185a. Var. *calurus* *Cass.* BLACK RED-TAIL. In my collection is a fine adult specimen of this variety obtained near Chicago in April, 1873, by my friend Mr. C. H. Smith.

Genus *Archibuteo* *Brehm.*

186. *A. lagopus* var. *sancti-johannis* (*Penn.*). Arrives in large numbers the first of October, and after remaining for a few weeks the majority pass further south for the winter. The last of February and first of March they depart for the north. Exceedingly shy except while migrating, and in consequence but few are shot. Mr. C. H. Smith captured alive a fine specimen in the black plumage, in the spring of 1874, and kept it until the early part of summer, when the hot weather caused its death.

For noble presence and piercing eye this bird has few equals among

our Falconidæ. The specimen above mentioned bore a striking resemblance to a Golden Eagle.

Genus *Aquila* *Auct.*

187. *A. chrysaetus* var. *canadensis* *Linn.* GOLDEN EAGLE. Not very uncommon during winter. Arrives in November and departs early in spring. Formerly nested throughout the state. Dr. Hoy records the breeding of a pair of these birds in a tree near Racine in 1851 (Wis. Ag't Rept., 1852). In December, 1874, while hunting Prairie Chickens in a field a few miles south of Chicago, my friend, Mr. T. Morris, was suddenly attacked with great fury by a pair of these birds, they darting so close that had he been prepared he could easily have touched the first one with his gun. As it arose to renew the attack he fired a small charge of number six shot, and brought it down, dead. The second then darted at him, and so rapidly that he did not fire until it had turned and was soaring up, but so near that the charge passed through the primaries in a body, disabling but not injuring the bird, which was then captured alive. The cause of this attack was explained by the proximity of a carcass upon which these birds had been feeding. The craw of the dead eagle contained a large quantity of carrion, as I learned upon skinning it.

Genus *Haliæetus* *Sav.*

188. *H. leucocephalus* (*Linn.*). BALD EAGLE. A common winter resident throughout the state, and breeds sparingly. Mr. T. H. Douglas writes me that a pair reared young in the vicinity of Waukegan, in 1873.

Family CATHARTIDÆ.

Genus *Rhinogryphus* *Ridg.*

189. *R. aura* (*Linn.*). TURKEY BUZZARD. A very irregular and rare visitant in this vicinity. Sixty miles south it is a common summer resident, yet I know of but very few instances of its occurrence here. A specimen was captured, after a snow storm, late in autumn, several years since at Waukegan, by Mr. Charles Douglas.

Family COLUMBIDÆ.

Genus *Ectopistes* *Sw.*

190. *E. migratoria* *Sw.* WILD PIGEON. Very abundant migrant; 15th of March to middle of April, and in October and November. Sometimes arrives in February. A few isolated pairs still breed in unfrequented woods.

Genus *Zenædura* Bonap.

191. *Z. carolinensis* Bonap. CAROLINA DOVE. A very common summer resident. The majority arrive the last of March and first of April, and depart by the middle of October. Straggling parties are occasionally observed during the winter. In many places this species becomes semi-domesticated, breeding in the trees in the yard and showing but little fear when approached.

Family MELEAGRIDÆ.

Genus *Meleagris*.

192. *M. gallopavo* Linn. WILD TURKEY. Formerly plentiful. No specimens have been observed for many years. Still abundant in Southern Illinois and in the bottom-lands along the rivers in Central Illinois.

Family TETRAONIDÆ.

Genus *Pediceetes* Bd.

193. *P. phasianellus* var. *columbianus* (Ord.). SHARP-TAILED GROUSE. If this species now occurs it is extremely rare. Mr. Kennicott notes it as "not uncommon formerly." At present it is restricted to the north-western portion of the state. The last record of its occurrence in this vicinity is furnished by my friend Mr. T. H. Douglas, who informs me that in the fall of 1863 or 1864, while two gentlemen were shooting prairie chickens near Waukegan, they found and secured a covey of these birds, numbering fourteen individuals. These had, in all probability, been raised in the immediate vicinity.

Genus *Cupidonia* Reich.

194. *C. cupido* Bd. PRAIRIE CHICKEN. Once excessively abundant; now rather scarce within thirty miles of Chicago. Still exists in large numbers on the larger prairies, but is becoming much less numerous in all the more settled districts. In many places the farmers are in the habit of collecting their eggs by the pailful to use for culinary purposes. Such a drain as this, with the annual slaughter by sportsmen, and the restriction of their breeding grounds by cultivation, is rapidly lessening their numbers except in the remote prairie districts.

Genus *Bonasa* Steph.

195. *B. umbellus* Steph. RUFFED GROUSE. Common resident in the wooded portions. Farther north, in the forests of Wisconsin and Northern Michigan, it is very abundant and so unsophisticated that it may almost be captured with sticks.

Genus *Lagopus* *Vieill.*

193. *L. albus* *Aud.* WHITE PTARMIGAN. Kennicott gives this species as: "Sometimes found in the timber along Lake Michigan." This note was based, I think, upon the capture of two specimens, December, 1846, near Racine, as noted by Dr. Hoy. (Wis. Agr. Rep., 1852.)

Family *PERDICIDÆ*.Genus *Ortyx* *Steph.*

197. *O. virginianus* *Bonap.* QUAIL. Still a common resident, although a recent severe winter greatly diminished their numbers. Exceedingly numerous in Southern Illinois.

Family *CHARADRIIDÆ*.Genus *Squatarola* *Cuv.*

198. *S. helvetica* *Linn.* BLACK-BELLIED PLOVER. Not uncommon during the migrations. Arrives in full breeding plumage the last of May and after lingering a few days the majority pass north. A few remain during the summer and undoubtedly breed. Returning early in September in fall plumage, they remain until well into October. While with us in the migrations this species is generally solitary, sometimes a half dozen individuals joining company, or a single specimen will be found leading a miscellaneous company of sandpipers and small plovers.

Genus *Charadrius* *Linn.*

199. *C. fulvus* var. *virginicus* *Borck.* GOLDEN PLOVER. A very abundant migrant. Arrives in large flocks early in April, and at this time the black of the breeding plumage has just begun to mottle their white breasts. Frequents wet prairies until the last of the month, when it generally departs. Sometimes a few remain as late as May 5, and are then in perfect breeding dress. Returning early in September, with the fall plumage just appearing, it remains until into October.

Genus *Ægialitis* *Boie.*

200. *Æ. vociferus* (*Linn.*). KILLDEER PLOVER. Common summer resident. Arrives the first of March and departs in October. Stragglers sometimes appear in mid-winter, during a few warm days.

201. *Æ. semipalmatus* *Bonap.* SEMI-PALMATED PLOVER. Common during the migrations, generally in small flocks. In spring the migrations extend from April 25th to May 30th, and in fall from July

31st to the last of October. The 2nd of July, 1873, I obtained several specimens of this species near Chicago. From the condition of the abdomen and ovaries of one specimen, and the presence of several recently fledged young, I came to the conclusion that they had nested in the vicinity. It is barely possible, however, that these birds were unusually early arrivals from more northern breeding grounds, although the arrivals from the north generally begin about the last of the month. My suspicions that the species either breeds in this state, or at no far distant point, were strengthened the following season when several females examined the last of May contained eggs which would have been deposited within a short time.

202. *Æ meloda* var. *circumcincta* Ridg. WESTERN PIPING PLOVER. Very common summer resident along the Lake shore, breeding on the flat, pebbly beach between the sand dunes and shore. Arrives the middle of April and proceeds at once to breeding.

From a specimen shot the 24th of April, 1876, at Waukegan, I obtained a perfect egg, and the abdomen of several females obtained the same day exhibited unmistakable signs that they were already breeding, as did, also, the actions of the birds. Some thirty pairs were breeding along the beach at this place, within a space of two miles, and I afterwards found the birds as numerous at several points along the shore. Every effort was made to discover their nests without success, although the birds were continually circling about or standing at a short distance uttering an occasional note of alarm. The first of July, the year previous, Dr. Velie obtained young but a very few days old, at this same locality, showing that there is considerable variation in the time of breeding. This was also shown by specimens obtained the last of May,—and which I think were later arrivals than those found breeding in April,—having the ova just approaching maturity.

Departs the last of September. The larger portion of the specimens examined show the complete ring of *circumcincta*, while others exhibit but little more black than in *meloda*, or have the complete ring of the former indicated by faint black tips to the feathers across the breast.

Family HÆMATOPODIDÆ.

Genus *Strepsilas* Linn.

203. *S. interpres* (Linn.). TURNSTONE. Common migrant along Lake Michigan. Arrives May 15th in full breeding plumage and is found until the first week in June. Returns early in August, still in breeding plumage, which is exchanged for that of winter during the last of the month. Departs about the 20th of September. While

here they are generally found in company with flocks of the smaller species of sandpipers.

Family **RECURVIROSTRIDÆ.**

Genus *Recurvirostra* Linn.

204. *R. americana* Gmel. AVOCET. A rare migrant. Generally occurs in small parties the last of April and first of May, and during September and the first of October. Frequents the borders of marshy pools.

Genus *Himantopus* Briss.

205. *H. nigricollis* Vieill. STILT. An exceedingly rare visitant. Dr. Hoy records the occurrence of a small flock near Racine, in April, 1847. In the collection of the Illinois Natural History Society, at Normal, Ill., is a fine specimen of this species, taken in McLean County, Ill.

Family **PHALAROPODIDÆ.**

Genus *Steganopus* Vieill.

206. *S. wilsoni* Sab. WILSON'S PHALAROPE. Very common summer resident in this vicinity. Found in abundance about damp prairies and on grassy marshes. Arrives about the middle of May and remains until into August. I have found its nest from the 25th of May to June 25th. The young usually appear about the middle of June and commence to fly the first of July. The breeding plumage of the female of this species is much brighter and richer than that of the male, as has been recently announced by Mr. A. L. Kumlein ("Field and Forest," July, 1876). The male builds the nest and attends exclusively to the duties of incubation, it alone possessing the naked abdomen during the breeding season. The female always remains near and shows great solicitude upon the nest being approached. The first plumage of the young, described by Dr. Coues on page 467, "Birds of the North-west," is retained until they depart for the south the last of July or early in August. The adults assume the winter plumage during July. This plumage is much like the breeding plumage of the male except that there is a hoary cast over the back and neck caused by grayish tips to the feathers, and the female has a greater amount of dull chestnut on the sides of the neck. The following description of the breeding plumage of the male is from a series of six specimens taken in Northern Illinois the last of May and first of June, 1876. Bill, legs, and feet pure black. Crown of head varying from a light to a dark blackish brown. The white stripe so evident on the nape of the female is entirely absent on young males of the preceding year, and but obsoletely indicated in old speci-

mens. The short white stripe over the eye is nearly as distinct as in the female. Sides of the neck washed with faint chestnut brown, rarely as deep even as the fore part of the breast in the female. The glossy black auricular patch, which extends under the eye to the lores on the female, is merely indicated by a brownish line mixed with the color of the neck. The chestnut stripes along the back of the female are only indicated in very old and perfect plumaged males, by a few rusty colored feathers scattered over the shoulders and among the scapulars. The upper parts vary from a dark blackish brown with each feather tipped with lighter, to a light grayish brown, the feathers bordered with ashy white. In all cases the feathers have darker centres. Rump and upper tail coverts lighter and sometimes pure white. The primaries nearly as in the female. The remainder of the wing lighter. Tail as in the female. Under parts white except on fore part of breast, which is light ashy brown, the same extending along the sides to the flanks. A very light wash of chestnut is generally present on fore part of the neck. The male averages considerably smaller than the female. The breeding plumage of the female is as described by Dr. Coues ("Birds of the North-west," p. 467).

The nest is a simple structure of fine grass blades placed in a small saucer-shaped depression, generally in a perfectly open situation where but slight concealment is afforded by the few surrounding grass blades. Sometimes the eggs are deposited directly upon the ground, without any nest other than the slight hollow. The eggs usually number four and are very dark. Their general appearance is much like that of a small killdeer's egg with an unusual amount of dark markings.

Genus *Lobipes* Cuv.

207. *L. hyperboreus* (Linn.). NORTHERN PHALAROPE. Rather rare migrant the first of May, and the last of September and first of October. Frequents slow streams or marshy pools, where, swimming gracefully from one patch of floating weeds to another, it obtains its food. It is quite gentle and unsuspicious, and I have approached in a boat within five yards of one without its showing the least concern.

Genus *Phalaropus* Briss.

208. *P. fulicarius* (Linn.). RED PHALAROPE. Exceedingly rare. Occurs only during the migrations at about the same time as the preceding.

Family SCOLOPACIDÆ.

Genus *Philohela* Gray.

209. *P. minor* (Gmel.). WOODCOCK. Rather common summer

resident. Arrives early in March, nests the first of April, and departs late in autumn.

Genus *Gallinago* Leach.

210. *G. wilsoni* Temm. WILSON'S SNIPE. Abundant during the migrations and not a very rare summer resident. Arrives the first of April and nearly all are gone by the first of May. Returns in fall the first of September and departs by the first of November. Mr. T. H. Douglas has obtained its eggs near Waukegan, and while there in the spring of 1876, I found several pairs during the breeding season, in various portions of the marsh near that place.

Morning and evening and throughout cloudy days in the early part of the breeding season the male has a curious habit of mounting high overhead, then descending obliquely for some distance, and as it turns upward strikes rapidly with its wings producing a loud whistling sound with each stroke. This manœuvre is repeated again and again, and appears to be performed for the same purpose as is the "booming" of the night-hawk. Besides this sound the Wilson's snipe has a peculiar, sharp cry during this season, which is uttered when the bird is disturbed. I first became acquainted with this note in May, 1876, when, while walking along a marshy strip of land, I was surprised to hear a loud *kâ-kâ-kâ-kâ-kâ*, uttered with great force and in a rather loud, harsh tone. Turning quickly I was still more astounded to find the author to be one of these birds. It was flying restlessly from post to post along a fence and showed the greatest uneasiness at my presence, the notes being repeated at short intervals. Although its nest was probably near, I could not discover it.

Genus *Macrohamphus* Leach.

211. *M. griseus* Leach. RED-BREASTED SNIPE. Rather common migrant. Passes north, often in large flocks, in May and returns the first of August, and lingers in small numbers about muddy pools until well into October. Quite unsuspicious while feeding and will allow a near approach.

Genus *Micropalama* Bd.

212. *M. himantopus* Bd. STILT SANDPIPER. Of rare occurrence. The 8th of August, 1873, I saw a single specimen near the Lake shore in Chicago, and the 10th of September the same year, Mr. R. P. Clarke obtained a specimen at the same place.

Genus *Ereunetes* Ill.

213. *E. pusillus* Cass. SEMI-PALMATED SANDPIPER. Very abundant migrant and many remain through the summer. From repeated

dissections I am confident these are barren birds and, as Mr. Maynard suggests, probably young of the preceding year. Migrations: May 1st to 25th, and the last of August to October.

Genus *Tringa* Linn.

214. *T. minutilla* Vieill. LEAST SANDPIPER. Common migrant. Not so numerous as the preceding. Arrives the 1st of May and remains until the last of the month; returns with the preceding. The 5th of June, 1875, I found one of these birds building its nest near the Calumet River. When first observed it was busily at work in the midst of a small bunch of grass, but upon my approach it ran a few feet to one side and watched my movements. The nest was nearly finished, and was a shallow depression in the centre of the tuft of grass, formed by the bird, which had just commenced lining it with small straws. Unfortunately work was not resumed upon the nest after my visit, but the birds were noticed several times in the vicinity, and they probably had a nest in some safer spot. Several least sandpipers were observed near Waukegan the first of July, 1875, by Mr. Rice, who is certain they had nested in the vicinity.

215. *T. bairdii* Vieill. BAIRD'S SANDPIPER. A rather uncommon migrant during the middle of May, and the last of August and first of September. It is generally found in small parties or singly, with other species of sandpipers, but it sometimes occurs in large flocks.

216. *T. maculata* Vieill. GRASS SNIPE. Very abundant migrant. Sometimes uniting into large flocks containing several hundred and frequents wet prairies or marshes. At other times it can only be found singly scattered over the same territory. March 25th to May 10th, and the middle of September to the first of November. A few remain through the summer, but whether they breed or not I have been unable to decide.

217. *T. bonapartei* Schleg. BONAPARTE'S SANDPIPER. Rather uncommon migrant. Dr. Hoy writes "that it was formerly abundant during the migrations but is now rare" (at Racine). June 9th, 1876, I obtained one specimen and saw quite a number of others upon the Lake shore near Waukegan. Mr. R. P. Clarke informs me that he has taken it late in autumn upon the Lake shore near Chicago.

218. *T. maritima* Brunn. PURPLE SANDPIPER. Very rare visitant during migrations. A fine adult male obtained on the Lake shore, near Chicago, November 7th, 1871, is in the collection of Dr. J. W. Velie. When first seen it was in company with a flock of sanderlings. This is the only instance of the occurrence of this species of which I have learned.

219. *T. alpina* var. *americana* Cass. RED-BACKED SANDPIPER. Very abundant migrant. Arrives in full breeding plumage the last of

May and is found about muddy pools and flats near the Lake until the 5th of June. Returning in winter dress during September it remains well into October. At this season it is generally found in small parties, while in spring the flocks often contain hundreds of individuals.

220. *T. canutus* Linn. KNOT. This is another of the so-called "maritime species" which regularly visits its breeding grounds by way of the "Great Lakes," as well as along the coast. It is not a common but a regular migrant, passing north during May. It returns early in September and remains until October. I have never observed it away from the vicinity of the Lake shore, where it is generally found in company with one or two others of the same family.

Genus *Calidris* Cuv.

221. *C. arenaria* Linn. SANDERLING. Abundant migrant along the Lake shore. Arrives in full breeding plumage—which varies greatly with individuals—about the 20th of May, and is found in flocks, numbering from five to seventy-five, along the shore, until June 10th. Returns the first of August, still wearing its breeding dress, which is changed the last of the month for the duller garb of winter. Departs for the south by the 20th of October. This species, with *Æ. meloda*, is found almost exclusively along the bare sandy beach, where it would seem an impossibility for it to obtain a living.

Genus *Limosa* Briss.

222. *L. fedoa* (Linn.). MARBLED GODWIT. Rather common migrant. April 15th to May 15th, and September 10th to October 20th.

223. *L. hudsonica* Sw. HUDSONIAN GODWIT. Not very rare during the migrations. April 15th to May 10th, and September to the first of October. More common along the water courses in the western part of the state.

Genus *Totanus* Bech.

224. *T. semipalmatus* Temm. WILLET. Rare summer resident in the marshes and on wet prairies. Arrives the last of April and first of May. Departs by the first of October.

225. *T. melanoleucus* Gmel. GREATER YELLOW-LEGS. A common migrant and regular summer resident. Breeds. Arrives about the middle of April, the larger portion passing north early in May. Returns September first and remains until the last of October. In June, 1875, I found several pairs of these birds about the Calumet Marshes, where, from their actions, I was certain they were breeding, but was not fortunate enough to find their nests. The 10th of June, 1876, Mr. Rice observed a pair about a prairie slough near Evanston. A few days later a set of four eggs were brought him from a similar situa-

tion a few miles north-west of that place, and from the description of the parent bird—driven from the nest—he decided they must belong to this species. I perfectly agree with Mr. Rice's decision, for the prominent characteristics noticed by the collector are obviously applicable to this bird.

The nest was situated in a slight depression at the base of a small hillock near the border of a prairie slough, and was composed of grass stems and blades. The eggs measure respectively 1.70×1.30 ; 1.72×1.31 ; 1.74×1.32 ; 1.80×1.38 inches. The ground color is a deep grayish white, marked on three eggs with spots of dark brown, and on the other egg with spots and well defined blotches of a considerably lighter shade of the same. In addition there are shell markings and obscure spots of lilac. The markings are disposed quite abundantly over the surface of the egg, but are more numerous about the large end.

226. *T. flavipes* Gmel. LESSER YELLOW-LEGS. Much more numerous than the preceding. Frequents the same localities. Arrives a few days later and departs earlier for the south. A few breed. I obtained the young, barely able to fly, near a prairie slough the first of July, 1874, a few miles from Chicago, and have since observed several pairs during the breeding season about the Calumet Marshes.

227. *T. solitarius* Wils. SOLITARY TATLER. Common migrant. Arrives the first of May and remains until about the 25th, when the majority go farther north. I have several times taken young of this species just able to fly, and have observed the adults throughout the breeding season. I do not think there is the slightest doubt of its breeding in this vicinity. Departs for the south in August and September.

Genus *Tringoides* Bonap.

228. *T. macularius* Linn. SPOTTED TATLER. Very common summer resident. Arrives in April and departs late in autumn. Breeds in abundance among the small sand hills along the Lake shore. Near Waukegan, the first of June, 1876, I saw Mr. T. H. Douglas secure over two dozen of their eggs in considerably less than an hour. The nests were generally placed under a small shrub or in a thin tuft of grass and the eggs could be seen several yards away.

Genus *Actiturus* Bon.

229. *A. bartramius* (Wils.). FIELD PLOVER. Very common summer resident. Arrives early in April and departs in September. Frequents in greatest abundance the borders of marshes and half wild prairies. Quite difficult to approach when it first arrives, but during

the breeding season becomes perfectly reckless, and hovers over head or follows through the grass within a few yards until it has escorted the intruder well off its domain. The presence of a dog in the vicinity of its nesting place is the signal for a general onslaught by all the birds of the vicinity, which hover over the dog, and with loud cries endeavor to drive it away. Being but little appreciated as game it is seldom hunted in this vicinity.

Genus *Tryngites* Cab.

230. *T. rufescens* Vieill. BUFF-BREASTED SANDPIPER. Very rare migrant. A specimen is in the collection of Mr. R. P. Clarke, obtained upon the Lake shore, at Chicago, September 4th, 1873. Dr. Hoy gives it as "quite common" from September 15th to October 10th, near Racine (Wis. Ag'l Rep., 1852). This is, I think, a mistake, as is also his note regarding the abundance of *T. maritima* in the same list.

Genus *Numenius* Linn.

231. *N. longirostris* Wils. LONG-BILLED CURLEW. Formerly very abundant during the migrations, and a common summer resident. Now rather uncommon in the migrations and a very rare summer resident. A pair nested on the Calumet Marshes the spring of 1873. More numerous on the large marshes in Central Illinois. Arrives the last of April and departs in October.

232. *N. hudsonicus* Lath. HUDSONIAN CURLEW. Very rare migrant with the preceding.

233. *N. borealis* (Forst.). ESQUIMAUX CURLEW. Rather common during the migrations. Arrives a little later than the larger species and passes north with short delay. Returns the last of September and in October. Frequents wet prairies, with the golden plover.

Family TANTALIDÆ.

Genus *Tantalus* Linn.

234. *T. loculator* Linn. WOOD IBIS. An exceedingly rare summer visitant from Southern Illinois. Dr. Hoy has a specimen in his collection obtained at Racine, September 10th, 1869, and states that a second specimen was obtained near Milwaukee, and is now in a museum at that place.

Genus *Ibis* Mœhring.

235. *I. falcinellus* var. *ordii* Coues. GLOSSY IBIS. A very rare visitant. I know of but two or three instances of its occurrence.

Family ARDEIDÆ.

Genus *Ardea* Linn.

236. *A. herodias* Linn. GREAT BLUE HERON. Common summer resident. Arrives in April and I have seen a specimen on the Lake shore the first of December after a severe snow storm.

237. *A. egretta* Gmel. GREAT WHITE EGRET. A rather common summer visitant throughout Northern Illinois. Generally arrives the last of July and departs in September. Mr. Rice observed two specimens near Evanston, March 31st, 1875. Breeds in Southern Illinois and perhaps in other parts of the State.

238. *A. candidissima* Gm. LITTLE WHITE EGRET. Much less common than the preceding. Occurs at the same time.

NOTE. *A. cærulea* will probably be found, as it is even now more numerous in Southern Illinois during August and September than the two preceding species.

239. *A. virescens* Linn. GREEN HERON. Common summer resident everywhere except upon the open prairie, where, however, stragglers are often taken.

Genus *Nyctiardea* Sw.

240. *N. grisea* var. *nævia* Allen. NIGHT HERON. Common. Owing to its frequenting the almost impenetrable wild rice swamps this species would be overlooked on a transient visit to their haunt. The first of July, 1874, I saw a few young of the year in the Calumet Marshes, but it was not until June, 1876, that I learned anything regarding their habits in this state. The middle of this month, in company with my friend Mr. T. H. Douglas, I visited Grass Lake, Lake County, Illinois, some miles west of Waukegan. This "lake" is simply a widening of the Fox River, which flows through its centre, producing a shallow body of water a mile wide and about three miles long. A large portion of the lake is covered with a dense growth of wild rice. While collecting near a large patch of this we were surprised to see a number of night herons arise from the interior of the patch and commence circling about uttering hoarse cries. Upon examining the place we were still more surprised to find that the birds were breeding in this apparently improbable location. During this and the following day we examined, within an area of two acres, at least fifty nests of this species. They were all placed in the midst of particularly dense bunches of rice, the stiff, last year's stalks of which, converging slightly near the roots, formed a convenient base for their support. The nests were all well-built structures, composed of innumerable small pieces of dead rice stalks, varying from two to ten

inches in length. Some of the nests were quite mathematically built, the material being arranged so that the usual cylindrical form would become either a decided pentagonal or hexagonal figure. The nests averaged from twelve to fifteen inches in diameter at the top and from ten to thirty inches in depth. So firmly were they built that I several times stood upon a large nest, to take a more extended view, and did it but little damage. A few contained fresh eggs, and a few had young from one to ten days old, but the majority contained eggs with half grown embryos. The parents exhibited great solicitude while we were in the vicinity, but were so cautious that we succeeded in shooting but two.

Genus *Botaurus* Steph.

241. *B. minor* Boie. BITTERN. Very common summer resident in marshes and prairie sloughs. Arrives the last of March and departs the first of November. Nests principally in prairie sloughs. In over a dozen nests examined I have found but little variation. They are generally placed in rank swamp-grass or rushes close to the surface of the water, from which the nest is separated by a mass of grasses and other material either found upon the spot or collected from the immediate vicinity by the birds. The nest itself is a loosely formed platform constructed of the material nearest at hand, be it grass or reeds. In one instance some boys collecting for me found a nest of this species which the female refused to desert, so it was captured and brought me alive with the eggs, which were but slightly addled.

Genus *Ardetta* Gray.

242. *A. exilis* (Gmel.). LEAST BITTERN. A common summer resident everywhere in marshes and sloughs. It arrives the first of May and nests the last of this and all of the following month. The nest of this species I have always found supported, from one to three feet above the water, by the surrounding rushes. It is a very frail structure, being a thin platform from one to three inches thick, with scarcely depression enough in the centre to prevent the eggs from rolling out, and is composed of small dry pieces of reeds. The eggs vary from two to six in number. When approached while upon the nest the female generally slips quietly to one side and endeavors to find concealment, but should the approach of the intruder be hasty, she seeks safety in flight. Under ordinary circumstances this species places its nest by itself, but should an unusually good feeding ground be discovered, containing but one or two small patches of reeds, it will make the best of circumstances, and in such a place I have often found six or eight nests in close proximity.

Family **GRUIDÆ.**Genus **Grus** *Linn.*

243. *G. americanus* Linn. WHOOPING CRANE. Once an abundant migrant, but is now of rare occurrence in this vicinity. Along the Illinois River and more thinly settled portions of the State it is still common during the migrations, and a few pairs breed upon the large marshes in Central Illinois.

244. *G. canadensis* Linn. SANDHILL CRANE. Formerly nested abundantly on all the larger marshes, but now few remain to breed except on one or two large marshes in the central part of the State, where, I understand, they are still quite numerous.

Family **RALLIDÆ.**Genus **Rallus** *Linn.*

245. *R. elegans* Aud. KING RAIL. Common summer resident. Arrives the last of April and departs in October. Have obtained half-grown young the first of July, although they usually breed later than this. Found about grassy marshes and prairie sloughs.

246. *R. virginianus* Linn. VIRGINIA RAIL. Common summer resident. Arrives and departs with the preceding. I have obtained nests with eggs from the 6th of May until the middle of June. This species is found in almost any place where it can find suitable food. I have often flushed it in thickets when looking for woodcock, as well as from the midst of large marshes. The nest can rarely be distinguished from that of the Carolina rail in form or structure, and is generally placed in a similar location, with the exception that the present species shows a greater preference for dense tufts of grass. I have never seen more than nine eggs in a nest of this species.

Genus **Porzana** *Vieill.*

247. *P. carolina* Cab. CAROLINA RAIL. Exceedingly abundant summer resident in all marshy situations. Arrives the first of May and departs in October. Nests along the borders of prairie sloughs and marshes, depositing from eight to fourteen eggs. Their nest may often be discovered at a distance by the appearance of the surrounding grass, the blades of which are in many cases interwoven over the nest, apparently to shield the bird from the fierce rays of the sun, which are felt with redoubled force on the marshes. The nests are sometimes built on a solitary tussock of grass, growing in the water, but not often. The usual position is in the soft, dense grass growing close to the edge of the slough, and rarely in grass over eight inches high. The nest is a thick matted platform of soft marsh grasses, with

a medium sized depression for the eggs. In the spring of 1875, the sudden rise of the water in the sloughs in this vicinity flooded a great many water bird's nests, and among them Carolina rail's nests. Visiting the marshes soon after, I found that in every rail's nest that had been flooded the eggs had been broken by the rail piercing the side with her beak. In one instance the bird was found beside the nest, and when I looked at the eggs I found a portion of them broken and the contents still oozing out. I found that the coots (*Fulica americana*) and the gallinules had the same habit when their nests were destroyed by the water, although it was less common with them than with the rail. In autumn great numbers of these birds frequent the floating weeds along the borders of rivers where they are sometimes in such numbers that several may be killed at a single discharge. Dr. Bannister informs me that he has found quite a number of these birds lying dead, but without showing marks of injury, upon railroad tracks.

248. *P. noveboracensis* Cass. LITTLE YELLOW RAIL. Not very rare. Arrives early in May. Several specimens are taken each spring before the grass becomes sufficiently high to effectually conceal them. It undoubtedly breeds here, since the Smithsonian possesses a set of six eggs taken with the parent bird, May 17, by Mr. J. W. Tolman, at Winnebago, Illinois (vide, Prof. S. F. Baird in epist.). The following is the description of the above set of eggs from Coues's "Birds of the North-west": "They are the only ones I have seen and differ from all those of *P. carolina* in the color of the ground, which is a rich, warm buffy-brown marked at the great end with a cluster of reddish-chocolate dots and spots. Size, 1.15 by 0.85 to 1.05 by .80."

249. *P. jamaicensis* Cass. LITTLE BLACK RAIL. Like the preceding, of not very rare occurrence. Breeds. During the spring of 1875 I saw three specimens in the Calumet Marshes. The first was observed early in May. On the 19th of June, the same season, while collecting with me near the Calumet River, Mr. Frank DeWitt, of Chicago, was fortunate enough to discover a nest of this species containing ten freshly laid eggs. The nest was placed in a deep cup-shaped depression in a perfectly open situation on the border of a marshy spot, and its only concealment was such as a few straggling *carices* afforded. It is composed of soft grass blades loosely interwoven in a circular manner. The nest, in shape and construction, looks much like that of a meadow lark. The following are its dimensions in inches: inside depth, 2.50; inside diameter, 3.25; outside depth, 3.50; outside diameter, 4.50. The eggs are a creamy-white instead of clear white, as I stated in a recent article (Bull. Nutt. Orn. Club, Vol. I, p. 43), and average 1.00 by .81 inches. They are nearly perfectly oval, and are thinly sprinkled with fine reddish-brown dots,

which become larger and more numerous at one end. Minute shell markings in the form of dots are also visible. Owing to the small diameter of the nest the eggs were in two layers.

Genus *Gallinula* *Briss.*

250. *G. galeata* Licht. FLORIDA GALLINULE. Abundant summer resident everywhere in marshes and the larger prairie sloughs. Arrives the last of April or the first of May. Generally has a full set of eggs, numbering from seven to twelve, the first week of June. Its nests are placed wherever fancy dictates; on low ridges a rod or more from the water; in perfectly bare situations on the borders of marshes, or in the midst of the bulrushes or wild rice growing in several feet of water. The material used varies with the situation, from fine grasses to the coarsest rushes and fragments of wild rice stalks. In the latter case the nest often floats in the water and is held in place by the surrounding reeds. The young possess the usual black down and disproportionate feet of members of this family at an early age, but the basal two-thirds of the bill is bright red, the tip only being yellow. I have placed eggs under a hen, but the young, unless removed as soon as hatched, would scramble out and manage to get away. At this age they have a clear metallic peep, quite unlike that of a chicken.

Genus *Porphyrio* *Temm.*

251. *P. martinica* (Linn.). PURPLE GALLINULE. Very rare visitant. A male specimen was taken in May, 1866, by Mr. C. N. Holden, Jr., near Chicago, and Dr. Hoy informs me of its capture at Racine.

Genus *Fulica* *Linn.*

252. *F. americana* Gmel. COOT. Exceedingly abundant. Summer resident in large marshes, and it is far from rare in any marshy situation. Arrives the last of April and remains until the last of November. Nests at the same time as the Florida gallinule, but shows a greater preference for reed patches in which its nests are usually located, often in from two to four feet of water. The nests are generally larger than those of gallinules, and rarely composed of other material than the dry stalks of reeds. Dr. Cones' description of the nidification of this species will answer for most of the cases I have observed, and I have examined a large number of nests. (See "Birds of the North-west," p. 542.) As winter approaches, and the marshes and shallow pools become covered with ice, these birds congregate in immense flocks on the rivers and small lakes, and remain until the cold weather closes the streams.

This bird has a curious habit when approached by a boat in a stream, rising often before the boat is within gunshot, and flying directly by the boatman, generally so near that it may be easily brought down. The abundance of ducks and other game birds has caused the birds of this family to be but little molested, until within a few years, when the amateur sportsmen from Chicago, finding the ducks difficult to obtain, and "mud hens," as coots and gallinules are called, conveniently tame, have turned their batteries upon them and have caused a diminution in their numbers about the Calumet Marshes. But in the more retired marshes they still breed in undiminished numbers.

Family ANATIDÆ.

Genus *Cygnus* Linn.

253. *C. buccinator* Rich. TRUMPETER SWAN. Occurs during the migrations. Far from common.

Although many examples of the following species are brought to the Chicago market during the migrations, it is very rarely that this species occurs.

254. *C. americanus* Sharp. AMERICAN SWAN. Rather common during the migrations and a winter resident in the southern extreme of the state. In the spring of 1876 they were more numerous than usual; quite a large number of specimens were in market and many were seen on the small lakes and large prairie sloughs in this vicinity.

Genus *Anser* Linn.

255. *A. albifrons* var. *gambeli* Cs. WHITE-FRONTED GOOSE. Very abundant migrant, occurring in large flocks. Arrives from the north in October, and disperses over the state. Found in large numbers in corn fields in the central portion of the state, where hundreds are killed and shipped to the market. When the streams become frozen they remove farther south. Return early in March and frequent the same localities until about the first week of April, when, in company with the various other small species of geese, they depart for the north. During late seasons they occasionally linger until the last week of April.

The individual variation in this species is very great. A large majority have the ordinary white frontal band and the under parts plentifully mottled with black. In others the black gradually decreases until some specimens do not show the least trace of dark on the abdomen; in such instances the frontal white band is usually present. The young exhibit a dark brown frontal band in place of white, but with more or less dark spots on the abdomen. In very high plumage the abdomen becomes almost entirely black, only a few rusty colored

feathers being interspersed through the black. The white nail on the bill is generally crossed by one or more longitudinal stripes of dark horn color. In spring, as the breeding season approaches, the bill becomes a clear waxy yellow. There is also much variation in size among adults of this species. I have examined a number of specimens which by direct comparison were at least *one-fourth* smaller than the average.

256. *A. cærulescens* Linn. BLUE GOOSE. Although less abundant than the preceding species, it is far from uncommon. Many are sent to the Chicago market with the preceding during the migrations. During some seasons the blue geese are nearly as numerous as the white-fronted. Its habits and migrations, while with us, are essentially the same as those of the preceding species. The adults of this species invariably possess the white head and upper part of the neck, which in the younger specimens is more or less variegated with dark feathers. These disappear as the bird becomes older, and in many the head is a pure snowy white, in sharp contrast to the dark plumage of the rest of the upper parts. The young would appear, at first sight, to be a distinct species, so different is the pattern of coloration. The white of the head, neck, abdomen and tail coverts is entirely absent, and the bird is of an almost uniform ashy plumbeous, slightly darker about the head and lighter on the abdomen. This plumage is retained until the second year, at least, as many specimens are procured in spring with the dark head, neck and abdomen still immaculate, and these, I think, are young of the preceding year. At the same time specimens are found with the dark feathers about the head well mixed with white, representing the second year. In birds of the third year the white predominates, but not until the fourth or fifth year does the plumage become perfect.

257. *A. hyperboreus* var. *hyperboreus* Pall. SNOW GOOSE.

257a. Var. *albatus* Cass. LESSER SNOW GOOSE. Both forms are found throughout the state during the migrations, and, although Mr. Ridgway gives the *albatus* as the more common form, I think they occur in about equal numbers. The adult plumage of this species, as is well known, is pure white, with the primaries tipped with jet black. The young are quite different. The crown, back of neck and fore part of shoulders are dark plumbeous; the tip of each feather being whitish produces a grizzled appearance. A dark line extends from the eye to the upper angle of the bill. The frontal region, cheeks, throat, fore part of neck, breast, sides of body and rump are soiled ashy, lighter than the back of the head and neck, and appearing much as though caused by the continued contact of white feathers with dark earth; but a close examination shows that the effect is produced by each feather being mottled with fine dusky spots, which on the sides nearly

cover the entire feather. The shoulders, scapulars, tertials, greater coverts and secondaries, are of a varying shade of dark plumbeous edged with lighter, which, on the tertials and secondaries, becomes pure white, and is of considerable width. The tail feathers are much the same and the lesser wing coverts are like the sides of the neck—a grizzly ashy. The bill, feet, and tips of the primaries are black, as are two or three of the outer secondaries. This species generally migrates in flocks of large size, consisting only of its own kind. At times, however, the three species unite and proceed in company. It frequents the cornfields in Central Illinois while here, and migrates a little later in the fall, and earlier in the spring, than the white-fronted goose.

Genus *Branta* Scopoli.

258. *B. bernicla* Linn. BRANT GOOSE. Probably a rare visitant, but the only instance known to me of its capture in this portion of the country is a specimen taken by Dr. Hoy, from a flock of three, upon the Lake shore near Racine. The bird is now in his collection.

259. *B. canadensis* var. *canadensis* Linn. An abundant migrant. Arrives early in October and remains until the first of December. Returns in March and remains until well into April. Formerly bred commonly in the marshes throughout the state, and still breeds sparingly in the more secluded situations.

259a. Var. *hutchinsi* Rich. HUTCHINS' GOOSE. Rather common, but not the most common form, as my friend Mr. Ridgway states in his "Catalogue of Illinois Birds." I once had the pleasure of examining a series of Canada Geese which were sent to market by the same hunter, and obtained the same day in Central Illinois. Among the eight specimens in the lot were typical representatives of the two forms, above-named. In addition were several specimens which formed a direct chain in which it was impossible to tell where one variety ended and the other commenced. The size of the specimens, the coloration, and indeed every particular, aided in perfecting the series, except the number of tail feathers, which was eighteen throughout. In *hutchinsi* I have found this to be a very variable character, as a large portion of the specimens which agree perfectly with the dimensions of the latter possess the eighteen tail feathers, instead of sixteen, as given by authors.

Genus *Anas* Linn.

260. *A. boschas* Linn. MALLARD. An exceedingly abundant migrant and common summer resident in the more secluded marshes. Once nested abundantly in the prairie sloughs and along borders of marshes. The spring migrations extend from the last of March to

the middle of April. Autumnal, from the last of September until the last of November. The full complement of eggs is deposited before the middle of May, in some tussock of grass near the edge of the marsh.

261. *A. obscura* Gmel. DUSKY DUCK. An uncommon migrant with the preceding, and a very rare summer resident. Among the countless number of mallards killed yearly in this state are scarcely found more than one in two hundred of this species. One or two pairs nest each year on the Calumet Marshes.

Genus *Dafila* Leach.

262. *D. acuta* (Linn.). PINTAIL DUCK. Very abundant migrant, and rare summer resident. Arrives early in October and remains until the last of November; in spring passes north by the first of April. Each year a few pairs breed upon the marshes in this vicinity, but whether they breed in the State away from the Lake region I have no means of knowing. In the spring of 1875 several pairs of these birds nested in the prairie sloughs near the Calumet River, and on the 29th of May I found a nest containing three freshly laid eggs. The female was flushed from the nest when scarcely more than a rod away, and was at once joined by the male from a small slough a few rods distant. The nest was in the centre of a tall, thick bunch of grass on a small ridge between two sloughs, and was a slight hollow thickly lined with grass stems; no down had been added. The parent birds circled about overhead, often coming within gunshot, during the whole time I was in the vicinity. The eggs average 2.25 by 1.50, and are a grayish olive, similar to the set described by Dr. Coues ("Birds of the North-west," p. 563).

In June, 1876, several pairs were seen at Grass Lake, on the Fox River, but their nests were not discovered. In the collection of Dr. J. W. Velie is a male hybrid between this species and the mallard.

Genus *Chaulelasmus* Gray.

263. *C. streperus* (Linn.). GADWALL. This beautiful species is very common during the migrations from the middle of October to the last of November, and from the first to the last of April. A very rare summer resident. I have seen but two or three pairs here in the breeding season.

Genus *Mareca* Steph.

264. *M. penelope* Selby. EUROPEAN WIDGEON. Exceedingly rare straggler. Two instances are known; one quoted by Mr. Ridgway on the authority of D. G. Elliot, in "Proceedings of the Zoological Society" (see Ridg., Cat. Birds Ascer. to occur in Ill., 268), and a second is furnished by Mr. C. N. Holden, jr., who informs me that a fine

adult male was shot on the Calumet Marsh, April 13, 1876, and is now preserved in a collection in Chicago. It has also been shot on Lake Mendota, in Wisconsin, by Mr. Kumlien (Hoy).

265. *M. americana* (Gmel.). AMERICAN WIDGEON. A very abundant species during the migrations and not very rare summer resident. Arrives in spring about the middle of March and remains until about April 20th. It nests about the borders of marshes and prairie sloughs. While here during the migrations these birds show a decided preference for the open water on overflowed marshes and large sloughs, and are very difficult to approach. Immense numbers are shot along the various rivers in the state and sent to the Chicago market.

Genus *Querquedula* Steph.

266. *Q. carolinensis* (Gmel.). GREEN-WINGED TEAL. Very common migrant. Arrives about the 5th to the 10th of April, and the majority pass north by the 25th. Returns the first of October, and remains until into November. Breeds sparingly. I have known of a few instances of its nest being found, and have myself observed several pairs of the birds in this vicinity during the breeding season.

267. *Q. discors* (Linn.). BLUE-WINGED TEAL. Very abundant migrant and a common summer resident in all suitable localities. The middle of May, 1875, I obtained a nest of this species containing fourteen freshly laid eggs. The parent was flushed from the nest within a few yards. It was situated near a branch of the Calumet Marsh and close to the rail-road track, being about midway between the track and fence in a dense bunch of grass. The nest was a well matted structure composed of feathers and grass, with the rim turned in so as to partly cover the bird when sitting. As has been the case each time I have discovered a duck's nest, and often when I have been in the vicinity of one not known to me, the parents circled about me the entire time I was near the nest, often coming within gunshot and exhibiting considerable anxiety. Arrives a few days later than the preceding in spring, and leaves at about the same time in autumn.

Genus *Spatula* Boie.

268. *S. clypeata* Linn. SPOONBILL DUCK. An abundant migrant and rather common summer resident. Breeds in much the same localities as the preceding. Its eggs are deposited early in May. Arrives the last of March, and the larger number pass north before April 20th. The autumn migrations extend from the first of October until the middle of November.

Genus *Aix* Sw.

269. *A. sponsa* Boie. WOOD DUCK. Common migrant and

rather common summer resident in secluded localities, and is especially abundant in the "bottoms" along the rivers in the southern part of the state. Arrives early in April and departs the last of October.

Genus *Fuligula* Steph.

270. *F. marila* (Linn.). GREATER SCAUP DUCK. A rare migrant. Present with the following species in about the same proportion that *A. obscura* bears to *A. boschas*.

271. *F. affinis* Forst. LESSER SCAUP DUCK. An exceedingly abundant migrant and in years when the Lake does not become frozen over is a resident through the year. This is not an uncommon species upon the larger marshes and inland lakes during the breeding season. Commence to arrive in large numbers from the south the last of February or first of March, according to the season, and are mostly gone by the 20th of April. About the time they leave for more northern breeding grounds they congregate in very large flocks on rivers or small lakes, and soon all have disappeared from these haunts and none, except the comparatively few which remain to breed, are found there again until they return in autumn, about the 5th to 10th of October. Flocks may be found upon Lake Michigan from one to two weeks after they have left the inland waters. Their young are hatched from the first to the middle of June.

272. *F. collaris* Donov. RING-NECK DUCK. In about equal numbers with the preceding during the migrations. Its habits, haunts, and time of migration, agree very closely with those of the little scaup duck. This species also breeds about the marshes in North-Eastern Illinois, but in smaller numbers than the preceding.

273. *F. ferina* var. *americana* Eyton. RED-HEAD DUCK. Very common migrant. Arrives the last of March and lingers until the last of April. Returns the last of October and remains until the wild rice swamps freeze over, the last of November.

274. *F. vallisneria* Wils. CANVAS-BACK DUCK. Very common migrant. Migrates with the preceding. Like other species of the *Fuligulinae* found here, the canvas-back shows a liking for open water and is more numerous on the small inland lakes than in the marshes.

Genus *Bucephala* Baird.

275. *B. clangula* (Linn.). GOLDEN-EYE DUCK. Common migrant throughout the state and abundant on Lake Michigan, where it is usually a winter resident. This is usually a very shy species, but occasionally it exhibits great stupidity. I have known of several being shot from an open boat upon the Lake, by placing out wooden decoys which they would approach, sometimes while the gunner was

standing in plain view. This, however, was a rare occurrence. Arrives the last of October or first of November, and departs the first of April.

276. *B. islandica* Bd. BARROW'S GOLDEN-EYE DUCK. A winter resident upon Lake Michigan, and found irregularly throughout the state at that season. A specimen was obtained at Mt. Carmel, on the Wabash River, in December, 1874, by Professor F. Stein, and I have observed it at Chicago. Dr. Hoy writes that a specimen was shot at Racine during the winter of 1860. They are probably not uncommon upon the Lake in winter, but owing to the great difficulty experienced in collecting ducks on perfectly open water at this season, a definite knowledge of the numbers in which this and several other aquatic species visit us during winter has not been obtained.

277. *B. albeola* Bd. BUFFLE-HEAD DUCK. The most abundant species of the genus. Frequents the rivers and other inland waters in greatest abundance. Immense numbers are sent to the Chicago market each season. Although abundant with the preceding upon Lake Michigan, it is still more numerous on the inland waters. Winter resident. Arrives the last of October and sometimes remains until the first of May.

Genus *Harelda* Leach.

278. *H. glacialis* (Linn.). OLD-WIFE DUCK. An exceedingly abundant winter resident upon Lake Michigan and sparingly dispersed throughout the state during that season. It was obtained by Professor Stein at Mt. Carmel, in December, 1874. A few stragglers make their appearance the last of October, but the main body do not arrive until about the first of December. The last of March or first of April nearly all depart for the north, but a few are found until the last of the month. Just before they migrate they unite in large flocks and make a great gabbling and noise. At all times while here they are very shy and difficult to obtain.

Genus *Histrionicus* Lesson.

279. *H. torquatus* (Linn.). HARLEQUIN DUCK. Rather rare winter resident upon Lake Michigan. Dr. Hoy has secured several specimens at Racine.

Genus *Somateria* Leach.

280. *S. mollissima* Leach. EIDER DUCK. Not a very rare winter resident upon Lake Michigan and probably occurs in suitable places throughout the state. In my collection is an immature specimen, obtained near Chicago in December, 1874, and Dr. H. B. Bannister has several times noted them at Evanston. Dr. Hoy informs me that a specimen was shot at Racine in January, 1875.

281. *S. spectabilis* Leach. KING EIDER. Rare winter visitant—perhaps winter resident—to Lake Michigan and other parts of the state. “An adult female, obtained at Chillicothe, on the Illinois River, in the winter of 1874, has been sent to the National Museum by W. H. Collins, Esq., of Detroit, Mich.” (Ridgway). “A single specimen has been taken at Milwaukee, Wisconsin, and is preserved in a collection at that place” (Hoy).

Genus *Cedemia* Flem.

282. *C. americana* Sw. BLACK SCOTER. Rather common upon the Lake. Winter resident. Arrives the first of November and departs by the first of April.

283. *C. fusca* (Linn.). VELVET SCOTER. Like the preceding a rather common winter resident upon the Lake, and occurs throughout the state, specimens being sent to the Chicago market from the Illinois River and various other streams in Central Illinois.

284. *C. perspicillata* Steph. SURF DUCK. A common winter resident upon Lake Michigan and occurs throughout the state at this season. Quite a number of specimens were taken upon the Calumet Marshes during the fall of 1875, and many others seen. Arrives the last of October and departs the last of March. “A single specimen, an immature bird, was obtained at Mt. Carmel by Professor Stein in October, 1875” (Ridgway).

Genus *Erismatura* Bonap.

285. *E. rubida* Bonap. RUDDY DUCK. Very common during the migrations. Summer resident. Breeds. The spring migration begins about the middle of April and continues until the 5th of May. A few return as early as the first of October, but the main fall migration commences the last of this month and extends to the first of November. The middle of September, 1875, my friend Mr. T. H. Douglas, of Waukegan, found a pair with eight or ten full grown young in a small lake near that place, and obtained several specimens. As the fall migration of this species does not commence until some weeks later than this, I think it very probable these birds were hatched in the vicinity. This supposition is rendered still more reasonable by the following observations. The 12th of June, 1875, while walking through the dense grass close to the shore of Calumet Lake, looking for sharp-tailed finches, a female ruddy duck started from the grass a few yards in advance and flew heavily away and alighted in the reeds a short distance out from shore. Being well acquainted with the species, I at once recognized the bird by unmistakable peculiarities of form and flight, as well as coloration, so I did not shoot it as I could easily have done, but instead, made a thorough search for the

nest, which I was certain must be near. The dense grass, about three feet high, proved an effectual shield, however, and I was compelled to depart without the coveted eggs. The middle of June, 1876, while rowing among the numerous rice patches upon Grass Lake, in company with Mr. T. H. Douglas, a ruddy duck arose a short distance in advance and flew off in plain view, leaving no doubt as to the species, as we both recognized it at sight. The only other record of the occurrence of this species in the United States during the breeding season is that of Dr. Coues, who, while connected with the Northern Boundary Survey, found them breeding in numbers in Northern Dakota and Montana.

Genus *Mergus* Linn.

286. *M. merganser* Linn. GOOSANDER. Very common migrant, and a few remain about airholes in streams and ponds or upon Lake Michigan, during the winter. I do not think this species remains to breed, but it is barely possible it may in rare cases. Arrives the last of October and departs the last of March and first of April.

287. *M. serrator* Linn. RED-BREASTED MERGANSER. The rarest species of the genus in this vicinity. Frequents small reedy lakes, where it is a rare summer resident. Nests upon old muskrat houses. The migrations are: in fall, from October first to the last of November; in spring, the last of March to the first of May. A very rare winter resident. During the height of the migrations it is rather common upon Lake Michigan in small flocks.

288. *M. cucullatus* Linn. HOODED MERGANSER. Very abundant migrant. Common winter resident upon Lake Michigan. Breeds sparingly throughout the state. Arrives the last of October and remains until the first of April. The last of August, 1875, I found several pairs of these birds with partly grown young upon some small lakes in Union County, Southern Illinois.

Family PELECANIDÆ.

Genus *Pelecanus* Linn.

289. *P. trachyrhynchus* Lath. WHITE PELICAN. At present an exceedingly rare visitant during the migrations. Formerly they were regular and rather common migrants. Still migrate along the Mississippi River.

Family GRACULIDÆ.

Genus *Graculus* Linn.

290. *G. dilophus* var. *dilophus* Sw. DOUBLE-CRESTED COR-

MORANT. A regular but rather uncommon migrant and sometimes a winter resident.

290 a. Var. floridanus Aud. FLORIDA CORMORANT. A regular summer resident in Southern Illinois, occasionally straying to the northern portion of the state. A specimen of this variety was observed in May, 1876, at Waukegan. I do not think *G. carbo* occurs in this vicinity.

Family LARIDÆ.

Genus Stercorarius Briss.

291. S. pomatorhinus Vieill. POMARINE JAEGER. A rare winter visitant to Lake Michigan. It was first observed by Mr. F. L. Rice near Evanston and upon the strength of this introduced to the fauna of the state. I am happy to record a second instance of its occurrence near Chicago, October 9th, 1876, when I observed a fine adult specimen flying along the Lake shore, and so near that there could be no possibility of mistake.

Genus Larus Linn.

292. L. glaucus Brünn. GLAUCUS GULL. A rather rare winter visitant to Lake Michigan. Dr. Hoy has killed three specimens upon the Lake near Racine, one of which is now preserved in his collection. He has seen others during severe winters.

293. L. leucopterus Fabr. WHITE-WINGED GULL. A regular and not uncommon winter resident on Lake Michigan.

294. L. marinus Linn. GREAT BLACK-BACKED GULL. Not an uncommon winter resident upon Lake Michigan. The immature young are greatly in excess of the adults.

295. L. argentatus var. argentatus Brünn. EUROPEAN HERRING GULL. Very rare winter visitant to the Lake. A single specimen, an adult female, was obtained in the Chicago Harbor March 27, 1876. Dr. Coues records two other specimens of this form obtained in this country, one in Mr. Lawrence's private cabinet and the other in the Cambridge Museum (see B. of N. W., p. 628). The Illinois specimen has been examined by Dr. Coues and Mr. Ridgway and pronounced by them to be identical with the European bird. The most striking peculiarity is its small size and the white terminal space over two inches long, upon the outer primary. The dimensions of my specimen are as follows: length, 22.50; wing, 15.30; tarsus, 2.25; bill, 1.90. Iris hazel.

295 a. Var. smithsonianus Coues. AMERICAN HERRING GULL. Very abundant winter resident upon Lake Michigan, and occurs throughout the state. Large numbers frequent the prairie near the slaughter houses, in the vicinity of Chicago, where they find a gene-

rous supply of offal. Arrives from the north during October, and the adults, with the greater portion of the young, move north the middle of April. I do not think that the young breed until they don the perfectly adult plumage, for, in June, 1876, I found a large flock consisting of about two hundred immature gulls, nearly all of this species, upon the Lake shore near Waukegan, and upon making inquiries learned that each year about the same number were in the habit of remaining at this place through the summer. The flock contained birds in every stage of plumage between the last year's young and the adult birds, of which a few were present. The large number of fishing nets set at Waukegan explained their preference for that locality. A colony of these birds breed on an island in the channel between Lake Michigan and Green Bay, and many others at various places on Lake Superior.

296. *L. delewarensis* Ord. RING-BILLED GULL. Common migrant along the Lake. Very rarely remains through the winter. Most common with us September 20th to November 30th, and March 20th to the first of May. A few young of this species were, with the flock of young herring gulls, observed at Waukegan in June.

297. *L. tridactylus* Linn. COMMON KITTIWAKE GULL. A rare winter visitant to Lake Michigan. Dr. Hoy writes that in the winter of 1870 a single specimen of this species kept about the harbor for several days, but was too shy to be shot. He is quite certain of his identification, as he examined the bird carefully with a large field glass, while it was standing upon a piece of ice just out of gun shot.

298. *L. atricilla* (Linn.). LAUGHING GULL. "Summer visitant" (Ridgway). I give this species entirely upon the strength of its occurrence in Mr. Ridgway's Catalogue (Ann. N. Y. Lyc. N. H., Jan., 1874).

299. *L. franklini* Rich. FRANKLIN'S GULL. A rare visitant to Lake Michigan. A specimen was obtained at Milwaukee in 1850, and is preserved in a collection at that place (Hoy). This species undoubtedly is of more or less regular occurrence during the migrations in company with the immense numbers of *L. philadelphia* which pass along the Lake to their breeding grounds.

300. *L. philadelphia* Ord. BONAPARTE'S GULL. Exceedingly abundant migrant. Arrives in large numbers, and usually in full breeding dress, the 5th to 10th of April, and the majority, after lingering along the shore a few weeks, pass north to their summer resorts, during the first two weeks of May. Returning the last of August, while resuming the winter dress, they remain more or less abundant until well into November. In very mild winters a few remain during the season. As is the case with the herring gull, many of the young of this species do not proceed north, but remain along the Lake during the

breeding season. Instead of remaining about sand bars, however, they prefer the fishermen's stakes out half a mile or more from shore, and it is rarely that they cannot be found at such places during the summer months. The autumn moult occurs the last of August.

Genus *Xema* Leach.

301. *X. sabinei* Bonap. FORK-TAILED GULL. Exceedingly rare visitant to Lake Michigan. While collecting on the Lake shore near Chicago, the first of April, 1873, I saw a specimen of this bird in a small pool of water on the beach. At first I supposed it was a Bonaparte gull, and was about passing it, when it arose, and as it passed toward the Lake I saw it was something new to me, and fired. It flew a few rods and fell into the Lake about thirty yards from shore. It was in perfect breeding dress, as was shown by the black markings on the head, each time it was raised while struggling in the water. A gale from off shore soon drifted it from sight.

Genus *Sterna* Linn.

302. *S. anglica* Mont. GULL-BILLED TERN. An exceedingly rare visitant during summer.

303. *S. caspia* Pall. CASPIAN TERN. An irregular but not uncommon visitant during the migrations and in winter upon Lake Michigan. The 9th of June, 1876, I saw a fine specimen fishing along the Lake shore, at Waukegan. Its occurrence so late is very unusual. Dr. Bannister has frequently observed it at Evanston in winter.

304. *S. regia* Gamb. ROYAL TERN. An exceedingly rare summer visitant to Lake Michigan. A specimen was taken at Milwaukee many years since and preserved in a museum there (Hoy).

305. *S. hirundo* Linn. WILSON'S TERN. Very abundant migrant. From April 28th to May 10th, and the middle of October, are the times of the greatest abundance of this species. A few still breed on small islands at the northern end of the Lake, where they once nested in abundance. I have never observed it here during the breeding season.

306. *S. forsteri* Nutt. FORSTER'S TERN. Migrates with the preceding, but in less abundance. Rather common summer resident in this portion of the state. Breeds in the numerous small, reedy lakes. The young fly about the middle of July.

On page 679, "Birds of the North-west," Dr. Coues states that "in the interior" *forsteri* "almost replaces *hirundo*, being, in fact, the most characteristic species." This is the case during the breeding season, as *hirundo* seeks the larger and more open bodies of water, and *forsteri* prefers the small lakes and reedy streams. During the

migrations, however, the hosts of *hirundo* moving to or from their northern breeding places greatly outnumber *forsteri*.

The above is true of Illinois, and will, I think, apply equally well to other points in the Mississippi valley, where the two forms occur. This and the preceding are in breeding plumage when they arrive in spring. White feathers commence to replace the black cap early in August in *forsteri*. Although I have been aware that *S. forsteri* nested in this vicinity for several years, it was not until the middle of June, 1876, that I had the pleasure of examining one of their nests. While we were collecting eggs among the wild rice patches, on Grass Lake, June 14th, Mr. Douglas observed a pair of these terns hovering near a small patch of *Saggitaria* leaves growing in several feet of water, and rowing to the spot found the nest, which was a loosely built structure of coarse pieces of reeds resting upon a mass of floating plants and concealed from view by the surrounding leaves. Upon the side of the nest was a single young bird, about to scramble into the water, but upon seeing Mr. Douglas it crouched to avoid being observed, and was captured. A thorough search at the time failed to reveal any other young ones, so the adults, which had been darting and screaming about his head, were secured, with a second pair which had espoused the cause of their companions. Their anxiety we afterwards found to be the proximity of an unfinished nest, similarly situated. That evening we found and secured two more young upon the nest found in the morning. The next morning fortune favored me, and, while passing between several floating masses of decaying vegetable matter I observed four small heaps of wild rice stalks resting upon one of these masses, and on a nearer view, to my delight they proved to be the desired nests containing eggs. The nests were situated in a line, and the two outer ones were not over twenty-five feet apart. The only materials used were pieces of wild rice stems, which were obviously brought from some distance, as the nearest patch of rice was several rods distant. The nests were quite bulky, the bases being two feet or more in diameter. The greatest depth was about eight inches, and the depression in the centre so deep that while sitting in the boat a rod away the eggs were not visible. Two of the nests contained three eggs, and two contained two eggs, each. The following are the measurements of three of the eggs, representing the amount of variation: 1.70 by 1.25; 1.75 by 1.20 and 1.68 by 1.25. The ground color varies from a pale greenish to a warm brownish drab. The spots and shell markings are of a varying shade of brown, distributed much as in the other small tern's eggs.

While near the nests the birds were circling high overhead, now and then uttering a harsh cry, but, concealing myself in the rice near by, I soon secured several of the parent birds as they flew about the

nests, uttering angry cries at the spoliation of their treasures. After the first bird fell into the water, the others showed the usual sympathy of their kind, but as the third or fourth specimen was killed, the remainder cautiously withdrew and uttered their complaints at a safer distance. Several other pairs were nesting on the Lake at this time, but we were unable to find their nests.

308. *S. superciliaris* Vieill. LEAST TERN. A very rare summer visitant in this vicinity. A fine male specimen is in the collection of the Chicago Academy of Sciences, obtained June 11, 1876, upon the Calumet Marshes.

Genus *Hydrochelidon* Boie.

309. *H. lariformis* Coues. SHORT-TAILED TERN. Exceedingly abundant summer resident upon all the large marshes and prairie sloughs. Arrives the first of May and remains until the first of September, after which but few are to be found. I have taken freshly laid eggs from May 25th to June 18th. The middle of June I have taken specimens in perfect winter dress, although this is unusually early. Generally a few white feathers begin to appear near the base of the bill about this time, and by the first week of July an endless series may be seen between the perfect breeding to the perfect winter plumage. By the middle of July specimens in which the black predominates are rare. This bird frequents almost exclusively reedy streams and marshy situations, and is never found upon Lake Michigan except during the migrations, when a few specimens may be seen with the flocks of the larger terns.

The following notes upon the breeding habits of this species comprise my observations during the last two seasons, during which time I have examined between two and three hundred nests. In nearly every instance the eggs were deposited in a well-built nest formed of the surrounding material. In prairie sloughs the nests are generally located well out from shore, in from one to two and one-half feet of water, and in the midst of the fine wiry grass growing in such places. In such situations the nests are formed of a mass of the surrounding grass, consisting of both living blades and the dead straws floating in the water. These are heaped into a conical mass, upon the apex of which, resting but an inch or two above the surface of the water, the eggs were placed. As would be supposed these structures were often quite bulky. In one instance I collected all the eggs deposited in a small prairie slough, and upon visiting the place about a week later, found the birds had built smaller nests in shallow water, and deposited a second set of eggs. These were removed, and upon a third visit I found many of the birds were nesting upon the masses of dead weeds or upon old muskrat houses. The sets taken from the above nests

averaged as follows: first, three eggs; second, two eggs; third, one egg. When the nests are built upon a small lake, where the water is too deep for their nest to rest upon the bottom, they generally build a slight nest of grass stems upon a floating bog, mass of dead reeds or old muskrat houses, but a well built nest will be found in nine cases out of ten. Early in May, when farmers are ploughing near a place frequented by these terns, they often follow behind the plough and pick up the earth-worms and larvæ exposed.

An unfledged young one, which I once took home became very familiar in a few hours, and would come, upon being called by a squeaking noise, and take a fly from my fingers. It was also quite expert at capturing flies upon the floor, but it was some time before it learned to distinguish between a fragment of dirt or a nail head and the insect. Although but little over a week old it could run rapidly from place to place and appeared quite contented with its change of quarters, and but for an unfortunate accident which caused its death would, I think, have been easily raised.

Family COLYMBIDÆ.

Genus *Colymbus* Linn.

309. *C. torquatus* Bränn. LOON. Very common winter resident upon Lake Michigan. Formerly nested commonly among the small lakes in this portion of the state, but now it is of uncommon occurrence during summer.

310. *C. arcticus* Linn. BLACK-THROATED LOON. A very rare winter visitant upon Lake Michigan. There is a specimen in Dr. Hoy's collection, taken at Racine, and a second specimen was captured and preserved at Milwaukee.

311. *C. septentrionalis* Linn. RED-THROATED LOON. Very common winter resident upon Lake Michigan. Arrives late in autumn and leaves early in spring.

Family PODICIPIDÆ.

Genus *Podiceps* Lath.

312. *P. cristatus* Linn. CRESTED GREBE. Rather common upon Lake Michigan in winter. Although Mr. Ridgway states (he informs me on Mr. Kennicott's authority) that it is resident in the northern portion of the state, I have yet to see one during the summer.

313. *P. griseigena* var. *holbolli* Reinh. RED-NECKED GREBE. Rather uncommon winter resident upon Lake Michigan.

314. *P. cornutus* Lath. HORNED GREBE. Next to the Carolina Grebe, our most abundant species. Occurs commonly during the

migrations; the first of October to November 10th, and during April. Breeds sparingly in the small lakes.

315. *P. auritus* var. *californicus* Lawr. EARED GREBE. Not uncommon in winter upon Lake Michigan. Several species of grebes and a number of ducks are occasionally taken during the winter upon the hooks, set several miles off shore by the fishermen.

Genus *Podilymbus* Less.

316. *P. podiceps* Linn. CAROLINA GREBE. Very common summer resident. Arrives in April and remains until the first of November. Nests along the borders of reedy sloughs, marshes and rivers.

SPECIES NOT GIVEN IN THE PRECEDING LIST WHICH ARE KNOWN TO OCCUR IN ILLINOIS.

1. *Peucæa æstivalis*. Common, locally, in Wabash, Richland, and adjoining counties.
2. *Guiraca cærulea*. Rare in the southern half of the state.
3. *Cyanospiza ciris*. Seen in Wabash Co. in June (*Ridgway*).
4. *Caprimulgus carolinensis*. Wabash Co. (*Ridgway*).
5. *Campephilus principalis*.
6. *Falco lanarius* var. *polyagrus*. Wabash and Lawrence counties (*Ridgway*) and Rock Island (*Sargent*).
7. *Elanus leucurus*. Wabash Co. (*Ridgway*).
8. *Ictinia mississippiensis*. Abundant summer resident in the southern portion of the state. Probably occurs in Northern Illinois.
9. *Buteo nitida* var. *plagiata*.
10. *Archibuteo ferrugineus*. Under date of November 13, 1876, Mr. *Ridgway* writes me that while returning from the West the present autumn, Dr. Coues observed this species entirely across the Great Plains, and also on the prairies of Illinois, while on the Illinois side of the Mississippi, at Rock Island, it was still common.²
11. *Catharistes atratus*.
12. *Ardea wurdemanni*. Mr. *Ridgway* states that while at Mt. Carmel, Wabash Co., September 11 to 22, 1876, he found several of these birds along the Wabash River near that place, and that one was severely wounded, but escaped.
13. *A. rufa*. Not uncommon near Cairo in August.
14. *A. cærulea*. Excessively numerous near Cairo in August.
15. *Nyctherodias violaceus*. Breeds at least as far north as Wabash Co.
16. *Plotus ankinga*. Common in summer near Cairo, and seen by Mr. *Ridgway* near Mt. Carmel.

² See also Bull. Nutt. Orn. Club, Vol. II, p. 26.

LIST OF SPECIES WHICH BREED IN NORTH-EASTERN ILLINOIS.

1. *Turdus mustelinus*.
2. " *fuscescens*.
3. " *swainsoni*.
4. " *migratorius*.
5. *Harporhynchus rufus*.
6. *Minus polyglottus*.
7. *Galeoscoptes carolineus*.
8. *Sialia sialis*.
9. *Potioptila cerulea*.
10. *Parus atricapillus*.
11. *Sitta carolinensis*.
12. " *canadensis*.
13. *Thryothorus ludovicianus*.
14. " *bewicki*.
15. *Troglodytes ædon*.
16. *Cistothorus stellaris*.
17. " *palustris*.
18. *Mniotilta varia*.
19. *Helminthophaga chrysoptera*.
20. " *ruficapilla*.
21. *Parula americana*.
22. *Dendrocæa æstiva*.
23. " *cerulea*.
24. " *pennsylvanica*.
25. " *virens*.
26. " *pinus*.
27. *Siurus aurocapillus*.
28. " *noveboracensis*.
29. " *ludovicianus*.
30. *Geothlypis trichas*.
31. *Myiodioctes mitratus*.
32. " *canadensis*.
33. *Setophaga ruticilla*.
34. *Progne subis*.
35. *Petrochelidon lunifrons*.
36. *Hirundo horreorum*.
37. " *bicolor*.
38. *Stelgidopteryx serripennis?*
39. *Cotyle riparia*.
40. *Vireo olivaceus*.
41. " *philadelphicus*.
42. " *gilvus*.
43. " *flavifrons*.
44. " *noveboracensis*.
45. " *belli*.
46. *Ampelis cedrorum*.
47. *Collurio borealis??*
48. " *ludovicianus*.
49. " *var. excubitoroides*.
50. *Pyranga rubra*.
51. *Carpodacus purpureus*.
52. *Chrysomitris tristis*.
53. " *pinus*.
54. *Pyrgita domestica*.
55. *Passerculus savanna*.
56. *Pooecetes gramineus*.
57. *Ammodromus henslowi*.
58. " *passerinus*.
59. " *var. nelsoni*.
60. *Chondestes grammacæ*.
61. *Zonotrichia albicollis*.
62. *Spizella pusilla*.
63. " *socialis*.
64. " *pallida*.
65. *Melospiza melodea*.
66. " *lincolni*.
67. " *palustris*.
68. *Euspiza americana*.
69. *Hedymeles ludovicianus*.
70. *Cyanospiza cyanea*.
71. *Cardinalis virginianus*.
72. *Pipilo erythrophthalmus*.
73. *Eremophila alpestris*.
74. *Dolichonyx oryzivorus*.
75. *Molothrus pecoris*.
76. *Agelæus phæniceus*.
77. *Zantho. icterocephalus*.
78. *Sturnella magna*.
79. " *var. neglecta*.
80. *Icterus spurius*.
81. " *baltimore*.
82. *Quiscalus var. æneus*.
83. *Coreus americanus*.
84. *Cyanura cristata*.
85. *Tyrannus carolinensis*.
86. *Myiarchus crinitus*.
87. *Sayornis fuscus*.
88. *Contopus borealis?*
89. " *virens*.
90. *Empidonax var. trailli*.
91. " *minimus*.
92. " *acadicus*.
93. " *flaviventris*.
94. *Ceryle alcyon*.
95. *Chordeiles popetue*.
96. " *var. henryi*.
97. *Anrostomus vociferus*.
98. *Chætura pelagica*.
99. *Trochilus colubris*.
100. *Coccygus americanus*.
101. " *erythrophthalmus*.
102. *Picus villosus*.

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| 103. <i>Picus pubescens.</i> | 142. <i>Totanus solitarius.</i> |
| 104. <i>Centurus carolinus.</i> | 143. <i>Tringoides macularius.</i> |
| 105. <i>Melanerpes erythrocephalus.</i> | 144. <i>Actiturus bartramius.</i> |
| 106. <i>Colaptes auratus.</i> | 145. <i>Numenius longirostris.</i> |
| 107. <i>Otus</i> var. <i>wilsonianus.</i> | 146. <i>Ardea herodias.</i> |
| 108. " <i>brachyotus.</i> | 147. " <i>egretta.</i> |
| 109. <i>Nyctale acadica?</i> | 148. " <i>virescens.</i> |
| 110. <i>Scops asio.</i> | 149. <i>Nyctiardea</i> var. <i>naevia.</i> |
| 111. <i>Bubo virginianus.</i> | 150. <i>Botaurus minor.</i> |
| 112. <i>Falco communis</i> var. <i>anatum.</i> | 151. <i>Ardetta exilis.</i> |
| 113. " var. <i>columbarius.</i> | 152. <i>Grus americanus.</i> |
| 114. " <i>sparverius.</i> | 153. " <i>canadensis.</i> |
| 115. <i>Circus</i> var. <i>hudsonius?</i> | 154. <i>Rallus elegans.</i> |
| 116. <i>Nisus fuscus.</i> | 155. " <i>virginianus.</i> |
| 117. " <i>cooperi.</i> | 156. " <i>carolina.</i> |
| 118. <i>Buteo pennsylvanica.</i> | 157. " <i>noveboracensis.</i> |
| 119. " <i>swainsoni.</i> | 158. " <i>jamaicensis.</i> |
| 120. " <i>lineatus.</i> | 159. <i>Gallinula galeata.</i> |
| 121. " <i>borealis.</i> | 160. <i>Fulica americana.</i> |
| 122. <i>Aquila</i> var. <i>canadensis.</i> | 161. <i>Branta canadensis.</i> |
| 123. <i>Haliaetus leucocephalus.</i> | 162. <i>Anas boschas.</i> |
| 124. <i>Ectopistes migratoria.</i> | 163. " <i>obscura.</i> |
| 125. <i>Zenaidura carolinensis.</i> | 164. <i>Dafila acuta.</i> |
| 126. <i>Pediacetes phasianellus.</i> | 165. <i>Chaulelasmus streperus.</i> |
| 127. <i>Cupidonia cupido.</i> | 166. <i>Mareca americana.</i> |
| 128. <i>Bonasa umbellus.</i> | 167. <i>Querquedula carolinensis.</i> |
| 129. <i>Ortyx virginianus.</i> | 168. " <i>discors.</i> |
| 130. <i>Squatarola helvetica.</i> | 169. <i>Spatula clypeata.</i> |
| 131. <i>Aegialitis vociferus.</i> | 170. <i>Aix sponsa.</i> |
| 132. " <i>semipalmatus.</i> | 171. <i>Fulix affinis.</i> |
| 133. " <i>melodus.</i> | 172. " <i>collaris.</i> |
| 134. <i>Steganopus wilsoni.</i> | 173. <i>Erismatura rubida.</i> |
| 135. <i>Philohela minor.</i> | 174. <i>Mergus serrator.</i> |
| 136. <i>Gallinago wilsoni.</i> | 175. " <i>cucullatus.</i> |
| 137. <i>Tringa minutilla.</i> | 176. <i>Sterna forsteri.</i> |
| 138. " <i>maculata.</i> | 177. <i>Hydrochelidon lariformis.</i> |
| 139. <i>Totanus semipalmatus.</i> | 178. <i>Colymbus torquatus.</i> |
| 140. " <i>melanoleucus.</i> | 179. <i>Podiceps cornutus.</i> |
| 141. " <i>flavipes.</i> | 180. <i>Podilymbus podiceps.</i> |

SPECIES WHICH OCCUR IN SUMMER, BUT ARE NOT KNOWN TO BREED.

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| 1. <i>Protonotaria citrea.</i> | 13. <i>Meleagris gallopavo.</i> |
| 2. <i>Helmitherus vermivorus.</i> | 14. <i>Ereunetes pusillus.</i> |
| 3. <i>Dendroica</i> var. <i>albilora.</i> | 14a. <i>Tantalus loculator.</i> |
| 4. " <i>discolor.</i> | 15. <i>Ardea candidissima.</i> |
| 5. <i>Oporornis formosus.</i> | 16. <i>Porphyrio martinica.</i> |
| 6. <i>Pyrranga aestiva.</i> | 17. <i>Graculus</i> var. <i>floridanus.</i> |
| 6a. <i>Hylotomus pileatus.</i> | 18. <i>Larus</i> var. <i>smithsonianus.</i> |
| 7. <i>Conurus carolinensis.</i> | 19. " <i>delawarensis.</i> |
| 8. <i>Strix</i> var. <i>pratincta.</i> | 20. " <i>atricilla?</i> |
| 9. <i>Syrnium nebulosum.</i> | 21. " <i>philadelphia.</i> |
| 10. <i>Nauclerus forficatus.</i> | 22. <i>Sterna anglica.</i> |
| 11. <i>Buteo</i> var. <i>calurus.</i> | 23. " <i>regia.</i> |
| 12. <i>Rhynogryphus aura.</i> | 24. " <i>superciliaris.</i> |

SPECIES WHICH OCCUR ONLY DURING THE MIGRATIONS.

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| 1. <i>Turdus aliciae</i> . | 36. <i>Recurvirostra americana</i> . |
| 2. " <i>pallasi</i> . | 37. <i>Himantopus nigricollis</i> . |
| 3. <i>Sialia arctica</i> . | 38. <i>Lobipes hyperboreus</i> . |
| 4. <i>Regulus satrapa</i> . | 39. <i>Phalaropus fulicarius</i> . |
| 5. " <i>calendula</i> . | 40. <i>Macrorhamphus griseus</i> . |
| 6. <i>Troglodytes</i> var. <i>hyemalis</i> . | 41. <i>Micropalma himantopus</i> . |
| 7. <i>Anthus ludovicianus</i> . | 42. <i>Tringa bairdi</i> . |
| 8. <i>Helminthophaga celata</i> . | 43. " <i>bonapartei</i> . |
| 9. " <i>peregrina</i> . | 44. " <i>maritima</i> . |
| 10. <i>Perissoglossa tigrina</i> . | 45. " var. <i>americana</i> . |
| 11. <i>Dendroica coronata</i> . | 46. " <i>canutus</i> . |
| 12. " <i>maculosa</i> . | 47. <i>Calidris arenaria</i> . |
| 13. " <i>blackburniae</i> . | 48. <i>Limosa fedoa</i> . |
| 14. " <i>striata</i> . | 49. " <i>hudsonica</i> . |
| 15. " <i>castanea</i> . | 50. <i>Tringites rufescens</i> . |
| 16. " <i>cærulescens</i> . | 51. <i>Numenius hudsonicus</i> . |
| 17. " <i>palmarum</i> . | 52. " <i>borealis</i> . |
| 18. <i>Oporornis agilis</i> . | 53. <i>Ibis falcinellus</i> . |
| 19. <i>Geothlypis philadelphia</i> . | 54. <i>Cygnus buccinator</i> . |
| 20. <i>Myiodiodes pusillus</i> . | 55. " <i>americanus</i> . |
| 21. <i>Vireo solitarius</i> . | 56. <i>Anser</i> var. <i>gambeli</i> . |
| 22. <i>Ammodromus lecontei</i> . | 57. " <i>cærulescens</i> . |
| 23. <i>Zonotrichia leucophrys</i> . | 58. " <i>hyperboreus</i> . |
| 24. " var. <i>intermedia</i> . | 59. " var. <i>albatus</i> . |
| 25. " <i>coronata</i> . | 60. <i>Branta bernicla</i> . |
| 26. " <i>querulea</i> . | 61. " <i>canadensis</i> var. <i>hutch-</i> |
| 27. <i>Junco hyemalis</i> . | <i>insi</i> . |
| 28. <i>Passerella iliaca</i> . | 62. <i>Mareca penelope</i> . |
| 29. <i>Scolecophagus ferrugineus</i> . | 63. <i>Fuligula marila</i> . |
| 30. " <i>cyanocephalus</i> . | 64. " <i>vallisneria</i> . |
| 31. <i>Sayornis sayus</i> . | 65. " var. <i>americana</i> . |
| 32. <i>Sphyrapicus varius</i> . | 66. <i>Pelecanus trachyrhynchus</i> . |
| 33. <i>Pandion</i> var. <i>carolinensis</i> . | 67. <i>Graculus dilophus</i> . |
| 34. <i>Charadrius fulvus</i> var. <i>virgin-</i> | 68. <i>Xema sabinei</i> . |
| <i>icus</i> . | 69. <i>Sterna hirundo</i> . |
| 35. <i>Streptilas interpres</i> . | |

LIST OF WINTER VISITANTS AND RESIDENTS.

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|---|---|
| 1. <i>Myiadestes townsendi</i> . ³ | 10. <i>Chrysomitris pinus</i> . |
| 2. <i>Lophophanes bicolor</i> . ⁴ | 11. <i>Loxia leucoptera</i> . |
| 3. <i>Parus hudsonicus</i> . | 12. " <i>americana</i> . |
| 4. <i>Certhia familiaris</i> . | 13. <i>Ægiothus linarius</i> . |
| 5. <i>Ampelis garrulus</i> . | 14. " <i>canescens</i> . |
| 6. <i>Collurio borealis</i> . | 15. <i>Plectrophanes nivalis</i> . |
| 7. <i>Hesperiphona vespertina</i> . | 16. " <i>lapponicus</i> . |
| 8. <i>Pinicola enucleator</i> . | 17. " <i>pictus</i> . |
| 8a. <i>Carpodacus purpureus</i> . | 18. <i>Pyrgita domestica</i> . ⁵ |
| 9. <i>Chrysomitris tristis</i> . ⁵ | 19. <i>Junco hyemalis</i> . |

³ Straggler.⁴ Visitant from the south.

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| 20. <i>Spizella monticola</i> . | 49. <i>Fuligula affinis</i> . ⁵ |
| 21. <i>Eremophila alpestris</i> . | 50. " <i>collaris</i> . ⁵ |
| 22. <i>Corvus</i> var. <i>carnivorus</i> . | 51. <i>Bucephala clangula</i> . |
| 23. " <i>americanus</i> . ⁵ | 52. " <i>islandica</i> . |
| 24. <i>Pica</i> var. <i>hudsonica</i> . | 53. " <i>albeola</i> . |
| 25. <i>Cyanura cristata</i> . ⁵ | 54. <i>Harelda glacialis</i> . |
| 26. <i>Perisoreus canadensis</i> . | 55. <i>Histrionicus torquatus</i> . |
| 27. <i>Picus villosus</i> . ⁵ | 56. <i>Somateria mollissima</i> . |
| 28. " <i>pubescens</i> . ⁵ | 57. " <i>spectabilis</i> . |
| 29. <i>Picoides arcticus</i> . | 58. <i>Oedemia americana</i> . |
| 30. <i>Melanerpes erythrocephalus</i> . ⁵ | 59. " <i>fusca</i> . |
| 31. <i>Strix flammea</i> . | 60. " <i>perspicillata</i> . |
| 32. <i>Otus</i> var. <i>wilsonianus</i> . ⁵ | 61. <i>Mergus merganser</i> . |
| 33. " <i>brachyotus</i> . ⁵ | 62. " <i>serrator</i> . ⁵ |
| 34. <i>Syrinum cinereum</i> . | 63. " <i>cucullatus</i> . ⁵ |
| 35. <i>Scops asio</i> . ⁵ | 64. <i>Stercorarius pomatorhinus</i> . |
| 36. <i>Bubo virginianus</i> . ⁵ | 65. <i>Larus glaucus</i> . |
| 37. <i>Nyctea</i> var. <i>arctica</i> . | 66. " <i>leucopterus</i> . |
| 38. <i>Surnia</i> var. <i>hudsonica</i> . | 67. " <i>marinus</i> . |
| 39. <i>Astur</i> var. <i>atricapillus</i> . | 68. " <i>argentatus</i> . ⁶ |
| 40. <i>Buteo borealis</i> . ⁵ | 69. " <i>tridactylus</i> . |
| 41. <i>Aquila canadensis</i> . | 70. <i>Sterna caspia</i> . |
| 42. <i>Haliaetus leucocephalus</i> . ⁵ | 71. <i>Colymbus torquatus</i> . ⁵ |
| 43. <i>Pediacetes phasianellus</i> . ⁵ | 72. " <i>septentrionalis</i> . |
| 44. <i>Cupidonia cupido</i> . ⁵ | 73. " <i>arcticus</i> . |
| 45. <i>Bonasa umbellus</i> . ⁵ | 74. <i>Podiceps cristatus</i> . |
| 46. <i>Lagopus albus</i> . | 75. " var. <i>holbolli</i> . |
| 47. <i>Oryx virginianus</i> . ⁵ | 76. " var. <i>californicus</i> . |
| 48. <i>Fuligula marila</i> . | |

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MONDAY, DECEMBER 11, 1876.

C. PFOUNDEN, an English gentleman who has spent thirteen years in Japan, in the British Official Service, gave a familiar talk on

JAPAN AND THE JAPANESE.

Around the room were arranged a great variety of Japanese photographs, and colored pictures were exhibited and explained in illustration of the speaker's remarks. The photographs were exceedingly fine ones, and the pictures were mostly cartoons, many of them of political significance.

⁵ Also in summer.

⁶ Young in summer.

The lecturer remarked that Oriental life is surrounded by such a halo of mystery, fiction, and travellers' twice told tales, that a true picture has been rarely given by the travellers or stock book-makers. A very large amount of printed material relating to Japan exists, but the bulk of the later works are simply reprints or compilations from previous ones.

The residents, as a rule, in far distant lands, rarely enter very deeply into the language and literature of the people among whom their lot is cast. It is like having to cross unknown lands to reach a far distant mountain; the beauties of the extended view are as yet unknown. The ignorance and jealousy of the natives form an almost insurmountable difficulty to the foreigners trying to gain an insight into the inner life of the people.

The lecturer alluded to the charm and attraction to those who persevered in the exploration of these grand hitherto untrodden fields, for the toilsome journey is frequently relieved by rays of poetic beauty, glimpses of artistic design, brilliant and grotesque coloring, interesting legend, and sketches that show a deep knowledge of human nature, and of astute and refined capabilities. Quaint humor, terse proverbs, ready wit, are found. When the meanings of conventional allusions and frequently occurring sketches are met with, the study is most attractive, and the literature and art are appreciated.

Japan since the days of Marco Polo was from time to time brought before the world by attempts to reach its fabled shores. The age of adventure started by Polo's book was followed by one of discovery. All these attempts at discovery were surpassed by that of Columbus, who, in trying to find the Zipanga of Polo, reached this continent.

The lecturer said he should present some points on

subjects away from the beaten path. He alluded to the Japanese collection at Philadelphia, and said it was by no means a good exhibit of Japanese art. The officers were most anxious to exhibit the progress made in foreign science, but the Japanese traders, who were permitted to monopolize the space allotted, took advantage to display what they considered the most salable wares.

The generally received accounts that foreigners first arrived in Japan in 1542 is not correct. I have discovered in some Japanese works that foreigners arrived there in 1529-30. They mention the arrival of *black ships*, and that the captain of these black ships gave the prince called Otomo Sorian, lord of Tanega Shima, two "pieces of fire arms." The Spaniards in trying to cross the main must have been from time to time carried on to the shores of Japan. We find accounts of curious people landing on the coast and behaving themselves strangely. There is no doubt that the foreigners who landed there have influenced the arts of the people.

From 1530 to 1630 foreigners flocked into the country in large numbers; first Spaniards and Portuguese, then the Dutch and then the English. These were confined to Nagasaki. At this time the foreigners intermarried with the natives to a large extent.

Sketches were exhibited of the island Pappenburg, from which the foreigners are said to have been thrown into the sea.

After Perry's expedition to Japan hardly a season has passed when there has not been a book written on Japan. Kœmpfer's old book is the best we have. He had to work under great difficulty. All subsequent authors have followed his method. I have dared to strike out into new fields.

A new book was lately published by Harpers called

"The Mikado's Empire." Jarvis has published quite a work, taking as his basis the Hoku-sai illustrated art works. These works give some idea of the depth of feeling of the artist. All these curious sketches and illustrations have a meaning, though not apparent to us.

The Japanese have learned to copy our way of making cheap ware with peculiar legendary ornamentation. Old lacquer objects are the bridal outfits of the daughters of the nobles of Japan.

Previous to 2300 years ago the Japanese writers treated of mythological subjects, personification, etc., and several specimens of these curious old legends were translated by the lecturer and rehearsed to the audience. The lecturer then gave the meaning of some of the old legends, as about the sun goddess being on one occasion angry with the gods. She hid herself in a cavern, and the gods sent for dancers, etc. Female curiosity tempted her to peep in through the chinks and she was caught and drawn forth by the strong armed god. Of such incidents are these legends made up.

The next relates how the wicked step-brother was compelled to slay the monsters. He heard weeping and found a very ancient man and woman in distress because their only grandchild was to be sacrificed. Proposing to rescue her from the monster he procures some *saki*, and places it in a tub. The monster, dipping each of his heads into the tub, becomes tipsy. He then cuts the monster to pieces all but the tail, which he preserves and finds to be a wonderful charmed weapon. He takes the maiden away and builds her a hut, etc., etc. Afterwards he composes the poem which is the oldest Japanese poem. It is in thirty-one syllables, a line of five, one of seven, one of five and two of seven.

The son of one of the Emperors was sent to subdue

one of the provinces. His wife accompanied him. During a storm the faithful woman jumped into the boiling waters. His whole army was saved that it might punish the barbarians. The disconsolate husband cries, *Ah! tsuma koishi*:—O my dear wife, how I grieve for you! Next the legend of a beautiful lady who escaped during the troublous times with her children. One of these children afterwards became the Shogoun Yoritomo, the founder of Kamabura, in about 1190 to 1210 (A. D.). This gave rise to a number of old stories.

Another legend refers to a demon who haunted the palace of the Mikado.

These legends are fruitful sources of song and story in Japan, and all the characters on fans, screens, and pictures have a meaning. Fans are very much used for representations of scenes and other objects. In Japan they are used for advertisements. Nine-tenths of them are intended to advertise restaurant and theatrical resorts, with representations of noted dancing girls. Sometimes on the fans are views of places to attract sight-seers and tourists.

All Japanese decorations have a meaning, either mythological, legendary, historical, symbolic, or proverbial. One common sketch represents a man slaying a remarkable animal, a symbol of difficulties overcome. A fabulous animal is a decoration for imperial robes. Every animal, bird, and tree, and their relations to each other, their combinations, have their own peculiar meaning. A pine tree represents good wishes. A swallow represents return, as "When the swallows homeward fly." And so a cherry tree and pheasant, a bird flying to the plum tree, the bamboo and tiger, and the wild boar, have each their symbolic meanings. They have caricatures of men all eyes, all ears, or all legs, figurative of those who see too

much, hear too much, or can only run away. Their proverbs are very apt, as instances cited showed.

The Japanese are beginning to imitate foreign customs and to think more of the companionship of their wives. It was not until recently that husbands walked out with their wives. The man walked with friends of his own sex, and the woman with hers.

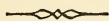
The lecturer then described the formal way and the elaborate ceremonies with which the Japanese receive a visitor, and gave an amusing account of a call he made on a Prince in 1866. The host received him on his hands and knees, and the guest followed his example. They rose together, and the host apologized for the poor reception. Many curious details were given. The call was made to examine the Prince's collection of pictures. The Japanese does not display his pictures on the walls of his room, but keeps them in a store-house outside, calls a servant, who summons a retainer, who is directed to go to a certain place and bring such a package from such a spot. The pictures are brought in one by one in little boxes and hung up for view. A collection of swords was also exhibited in the same way. It is therefore quite a labor to see any little collection in a gentleman's house.

Mr. Pfoundes then explained the meanings of the various works of art hung about the lecture room; the significance of the objects represented in the cartoons; the trees, flowers, etc. He referred to the prevalent superstitions of the people, their belief in spirit rappings, witchcraft, etc. The *mediums* are very poor people, and are recognized by the hats they wear. They carry continually a box supposed to contain the head of a dog. Some spirit has entered into this dog and becomes the medium of communication between the two worlds. The mediums were very unwilling to show me any of their

performances, for fear, I suppose, I should expose them and spoil their business.

He stated that lovers sometimes commit suicide together, and mentioned that he once saw the bodies of a girl and her lover, tied together with her girdle, floating down the river. She had filled her sleeves with stones so that they might sink.

A great many interesting facts were narrated, and a brief and graphic account of the manner of life in Japan was given. At the conclusion of the lecture Capt. Pfoundes invited the audience to propound any questions on particular points, which they desired to have answered, and some time was pleasantly and profitably spent in this manner.



REGULAR MEETING, MONDAY, DECEMBER 18, 1876.

MEETING this evening at 7.30 o'clock. Adjourned to Friday the 22nd.



ADJOURNED MEETING, FRIDAY, DECEMBER 22, 1876.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair.

Mr. WILLIAM P. UPHAM read a communication entitled "History of Stenography, with a proposal for a new System of Phonetic Short-hand Writing;" illustrating the same with diagrams and drawings on the black-board.

This communication was referred to the Publication Committee.

John P. Peabody, of Salem, was elected a resident member.

